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The Key Elements of Success and Failure in the NZ Sheep Meat Industry from 1980 - 2007

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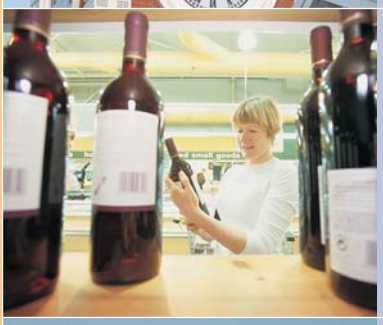

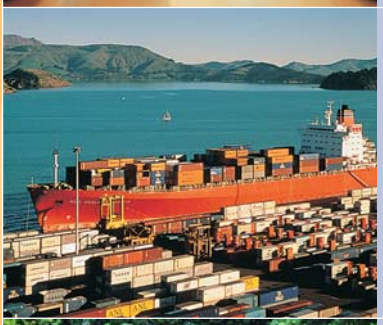

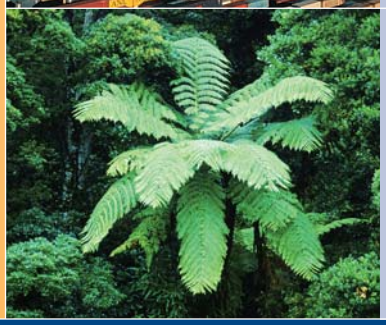

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Acknowledgements

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Executive Summary

This study explores the nature and performance of the New Zealand sheep meat industry from 1980 to 2007. As almost 94 per cent of sheep meat produced in New Zealand is exported the focus of this study is on the export sector of the sheep meat industry, and in particular, the lamb meat export industry.

Deregulation of the New Zealand economy led to a fundamental change of philosophy within the sheep meat industry. Government support was reduced in the mid- to late-1980s, and financial deregulation was initially associated with rising interest rates and high exchange rates. After an initial adjustment period, interest rates fell, but variable exchange rates have remained. After having a high level of involvement in the processing and marketing sectors through ownership of both processing companies and product, the role of the New Zealand Meat Board reduced in the mid-1990s to that of an industry-good role, managing quota and allocating research funding.

In the sheep meat industry, markets and market destinations have not changed dramatically over the study period 1980-2007, but the product form has undergone some quite radical changes. The nature of the product now being sold has been transformed from a frozen carcass to a range of both chilled and frozen, and bone-in and boneless cuts of lamb. Over the period concerned, supermarkets have emerged as the dominant prescriber of specifications, and these specifications have become more demanding.

This study has identified a number of factors that have been important in transforming the sheep meat industry from a heavily subsidised, production-driven sector to one that is more market-oriented operating in a market economy. The study has also identified factors that underpin the continued instability of the industry as a whole, and specifically, low profitability for process-exporting companies and variable returns for farmers.

- Market access – New Zealand has very favourable market access to the high-value EU market through the tariff-free quota, which the industry collectively negotiated. New Zealand is allowed to manage this quota and allocate it amongst processors. However, this advantage has probably meant that exporting companies have focused less on the diversification of their customer base. The distance from main markets provides advantages such as allowing time for the meat to age and improve its quality during shipping and protecting New Zealand's disease-free status, which is vital for maintaining market access. Halal-slaughtering is used across the industry and has ensured that the industry has some flexibility in the market where lamb can be sold. Despite its hands-off approach, the focus of the industry strategy on industry good issues gives confidence in the safety and integrity of New Zealand lamb and improves market access.

- Interventions – The removal of agricultural subsidies in the mid-1980s, which had been about ensuring stable prices to farmers and incentivising production increases, brought the New Zealand sheep meat industry into a market economy. This exposed the industry to the full risks of the market, and encouraged a focus on quality rather than volume. This encouraged a more customer-oriented approach to marketing, the development of new markets and considerable focus on productivity gains. In 1981, the processing sector was de-licensed. This enabled new players to emerge and bring with them a range of innovations and new best practices, radically changing processing and the types of products. However, this has contributed to excess

capacity because new processors could start up quite readily. The introduction of the Employment Contracts Act (1991) provided flexibility to the processing sector, allowing shift work and reducing union influence. Through the early-1990s, the New Zealand Meat Board was again directly involved in marketing lamb in an attempt to bring stability to the industry, but after several years, companies were again marketing lamb.

- Seasonal pasture-based production systems – On one hand, these systems provide a comparative advantage of relatively low cost production that yield a natural product. On the other hand, the highly seasonal nature of these supply systems requires some excess processing capacity, and variation in weather adds to the uncertainty of supply and quality. This seasonality and uncertainty of lamb supply drives processors to offer procurement premiums and engage in intense competition. When frozen carcasses were the predominant product, continuity of supply was not an issue. However, with the trend to chilled cuts, problems associated with seasonality have grown. Either these problems may worsen as land use change pushes sheep further into the hills or farm systems will change to deliver lambs from hill country farms in a similar pattern as from current finishing farms. Farmers currently appear financially secure, but much of this recent gain in wealth could evaporate should land prices fall back to a level more reflective of productive worth.

- High processor debt levels – The high indebtedness of some processing companies means that they are exposed to a high level of financial risk in an industry characterised by low profit margins. This situation makes attracting additional equity difficult. Further, high debt levels mean that incumbent companies are not readily able to close plants because their balance sheets cannot bear the large redundancy and write-down costs. This contributes to the excess capacity in the processing sector, and in turn the intense competitive rivalry.

- Leadership – Contrasting leadership within the processing sector and at the industry level has both contributed to innovation in the processing sector and stifled the changes that have been required to stabilise the industry. Positive leadership has seen the introduction of shift work, automation technologies and de-licensing of the sector. In contrast, egos and industry politics have held the sector back because they had established businesses around the incentive structures of the day, and the associated investments had considerable exit costs. The leadership amongst farmers required to facilitate industry co-ordination has largely been absent, and spot market relationships prevail.

- Farmer behaviour – The resultant shape of the sheep meat industry in New Zealand is due to behaviour of farmers and processors, and some of the fundamentals of pastoral farming. The key behaviours of farmers that drive the shape of the industry are the prevalence of spot market relationships between many producers and processors as mentioned above, and the lack of investment in the processing industry. The spot market relationships, driven by the desire for flexibility and opportunism, mean that processors have no certainty of supply. Some farmers have adopted contracts with processors to supply lambs at specific times and to specific customer requirements. However, farmers and processors often treat contracts with a cavalier attitude alike, depending upon the lamb market conditions. Farmers have also responded to the market signals and increased carcass weights, modifying their production systems to reduce the seasonality of supply. They have significantly intensified production systems and adopted a wide range of technologies that have markedly increased farm productivity. The lack of substantive investment by

farmers in the processing sector means that many farmers take a short-term view and are not greatly concerned about the profitability of that sector, but only with their own business. Long-term commitment is required to overcome the other challenges faced by the sector.

- Processor behaviour – The processing companies were once regional companies so were not directly competing against each other for lambs to process and market. De-licensing allowed them to expand to areas in which they had previously not operated, bringing rise to competition for lambs, and has contributed to the breakdown of co-operation between companies in investing in market development, and in research and development. It also means that their response to the behaviours of farmers has been to engage in intense price competition and encourage spot market relationships to the detriment of their individual and collective profitability, and reinforcing farmers' opportunistic behaviour. This lack of profitability, supply uncertainty and competition for lambs has driven the general reduction in market development and product innovation. There has been little use of *retail* brands by companies, with Bernard Matthews being the exception, but 'New Zealand Lamb' is widely recognised and is essentially an appellation. Individual companies have developed markets for their products. The increase in contracted supply of lamb products to customers adds further to the competitive pressures facing processing companies because they need a secure supply of lambs to fulfil their contracted obligations. However, the intense competition for lambs and the uncertainty of supply means that lower volumes of product are contracted than might be otherwise possible. Low profitability means that these opportunities are not being developed as rapidly as they might perhaps be. Greater sharing of information will be required to encourage farmers to commit to such programmes, and some processors are already well down this path.

- Innovation – Numerous innovations have provided quantum gains to production efficiency within the New Zealand sheep meat industry. These innovations improved the quality of the product, provided the opportunity to supply chilled lamb cuts to customers on the other side of the world, and increased productivity and improved safety in processing. There has also been considerable investment by farmers in innovations to substantively intensify and raise farm productivity. The sheep meat industry has been radically transformed through the adoption of innovations.

In summary, there is a mismatch between the needs of the market and the characteristics of the product, with the requirement for year-round supply of chilled meat conflicting with the seasonality of supply of New Zealand pastoral farming systems. There is no tightly coordinated industry strategy geared to the requirements of the market. Instead, industry organisations deal with industry-wide issues and individual firms make their own strategic business decisions. Processors try to align to the needs of a multitude of markets, while individual producers pursue flexible business strategies best suited to their farming properties and competencies.

Thus, we observe an industry with relatively weak, spot market relationships, and thus a processing sector facing quite hostile conditions and being focussed on competition with other processing companies, particularly at the procurement end. Not surprisingly, trust within the industry is poor, and information flows from the market are weak. As processors struggle in this environment, there is a risk that their conduct could exacerbate the situation that they are trying to overcome. Processors are trying to forge stronger relationships with customers and suppliers. However, if their situation forces them into opportunistic behaviours, then these

relationships will weaken. Although processors need stronger commitment from their farmer-suppliers, many farmers may be unwilling to commit to processors that themselves appear to be opportunistic, and so behave more opportunistically themselves.

The 'short-term' power within New Zealand sheep meat industry moves up and down the supply chain depending on various external factors that affect supply and demand. The market power was seen to lie with the UK supermarkets because of the size of the margins they add to the lamb they sell, but they do not control the entire industry. Historically, the meat workers unions have held very strong positions, especially before 1990. The banks have also previously had considerable levels of influence over the industry because they have tended to have the most capital invested in the processing sector. The real 'long-term' power lies with farmers because they control the supply of livestock. It is their use of that power that determines whether meat processing companies make a profit. Given the current structure of the meat processing sector, processors must compete for or contract throughput to cover their high fixed and semi-fixed costs, meet customer contract obligations and retain their valuable EU quota share.

There is an urgent need for a new leader to emerge to drive the required industry change. They will need both vision and personality, because they will certainly need to challenge the *status quo*, which will 'upset' some incumbents, and it is very difficult for an industry to build robust and sensible strategy in a crisis. Their role will be to ensure that farmers, processors and marketers build trust and work together to raise prices and receive a fair share. A long-term view is required rather than the current short-term view. Co-operation is required to stabilise the industry and improve performance. This involves linking farmers with customers, as is being done successfully by some processors. Clear and honest communication of the challenges and realities is required so that all participants can be well informed, and can contribute and commit to another transformation of the industry. This is certainly achievable given the transformation the sector has undergone over the last three decades.

Chapter 1
Introduction

AN EXAMINATION OF THE PAST IS ESSENTIAL for drawing lessons from previous experience so that more informed future decisions can be made. The Agribusiness Research and Education Network (AREN) has undertaken this study of the New Zealand sheep meat sector as part of a wider analysis of structure, conduct and performance across major agribusiness sectors over the past two and a half decades. The wider project includes three other sectors - venison, kiwifruit and dairy sectors.

By examining the different stages of development in the sheep meat industry and identifying the key determinants of success this research aims to develop a research basis that will assist policy formation in strengthening New Zealand's sheep meat sector. This will be achieved through comprehensive research and analysis that will provide lessons to enable strategic planning for efficient, productivity driven growth.

1.1 Overview of the research project

This project uses the sequential framework proposed by Yin (2002) for steps in a multiple-case research project, which are define and design; prepare, collect and analyse within case; compare findings from cases (cross-case analysis); and conclude. The first stage of define and design involved a review of studies on business structure, management practises and performance indicators related to agri-food systems in New Zealand and overseas. Following on from this review, a brief historical overview for each of the sectors was completed. The review of literature and the historical overviews guided the development of the theoretical framework that underpin the research project, the data to be collected and the specific data collection methods. The theoretical framework was used to develop semi-structured interviews which were conducted with personnel from a wide range of businesses and organisations involved in each sector, either at present or in the past. The interviews were based mainly on open-ended questions following the usual three stages of interviewing: Opening (rapport building), developing and closing (Keats, 2000). Through the interview process key factors influencing management decisions were identified and described. The researchers were seeking to develop descriptions of the companies with respect to structure, strategy and conduct; and to build a clear understanding of their relationship with performance level over the past 27 years.

1.2 The research question

Since the 1980s the New Zealand sheep meat industry has been through substantial change as a result of internal company and sector developments, external pressures from customers, governments, competitors and ongoing business evolution. These changes are examined to provide a better understanding of the development path of the sheep meat industry. This historical review will provide an understanding of how business structure and conduct influence the performance of the sheep meat industry.

The objective of this study was to explore the key elements underlying the evolution of the New Zealand sheep meat industry. Therefore, in examining the structural changes, conduct and performance of the sheep meat sector, the research question that we addressed was:

What have been the key elements of success and failure in the New Zealand sheep meat industry? In answering this question, the following questions will also be addressed:

- How has New Zealand's sheep meat sector evolved?
- Why did New Zealand's sheep meat industry evolve the way that it has?

In responding to these questions this study will identify the range of factors that have driven success in the sheep meat industry. It will also evaluate the importance of these factors at different stages in the industry's evolution.

1.3 Motivation behind the research

This research is motivated by the need amongst agribusiness researchers for a robust foundational knowledge base on the sheep meat sector in New Zealand. Future performance can be enhanced as a result of rigorous analysis of the past if the lessons are applied. This knowledge of the past can directly impact on current policy analysis and new and ongoing research and marketing programmes.

From a planning point of view, we have to understand the structure of the sheep meat industry, its operations, and the practical relationships which already exist between industry participants. Changes that have occurred in the environment in which the industry operates also need to be examined so that future industry challenges can be informed by these past conditions and responses.

1.4 Research coverage

The study explores the nature and performance of the New Zealand sheep meat industry from 1980 to 2007. As almost 94 per cent of sheep meat produced in New Zealand is exported the focus of this study is on the export sector of the sheep meat industry, and in particular, the lamb meat export industry.

The examination of the industry since 1980 can be separated into the following key focus areas:

- Changing market characteristics – production trends, target markets, changing consumer preferences and increasing competition.
- Operating environment – how different factors have changed to impact on the industry.
- Industry structure – changes in company and industry level in response to changing circumstances and environments.
- Conduct and performance – analysis of broad performance measures, extent of sharing of information, knowledge and resources within the industry and the degree of interdependence along the value chain.

1.5 Research method

The project proceeded as per the methodology documented by the AREN team (AREN, 2006). The first stage in the research was to review relevant literature to provide the

researchers with a sound contextual understanding. The literature review enabled the researchers to identify topics for further exploration through the key informant interviews.

To ensure a comprehensive set of respected information sources a list of key individuals from within the industry was required. Hence, key industry people including past and current industry leaders were identified. The process identified people from all of the key groups within the industry including: producers, processors and exporters, union representatives, scientists and industry body representatives. To guide the interviews, an interview question guide was developed. Questioned focused on industry structure; the strategies of industry and firms; the conduct of firms and the performance of firms, where firms include both processing companies and producers.

The key informant interviews were carried out between July and November 2007. To support the views expressed in the interviews or to confirm dates, it was sometimes necessary to obtain secondary published data. This was particularly the case with industry performance. Much of this data was obtained from the published annual reports of processing companies. Producer performance data was largely obtained from Meat and Wool New Zealand's Economic Service.

1.6 Report structure

Part I (Chapters 2 – 6) presents a literature review of the sheep meat sector in New Zealand which provides background to the chapters in Part II which is based upon the interview findings.

Chapter 2
Literature Review

The following literature review provides an overview of changes in New Zealand's sheep meat processing and export industry since the 1980's. The review is broken into four sections that discuss trends and changes in international trade, product differentiation, farm gate production and the structure and efficiency of the processing industry.

Chapter 3 looks at recent changes in New Zealand's sheep meat export markets. It begins by discussing the influence of the United Kingdom (UK) in the early development of the industry and the impact that the UK's move into the European Community (EU) had on diversifying markets in the 1970s. From there it provides a brief overview of the impact of the EU's agricultural support policies on New Zealand and how special market arrangements were made to provide preferential access for New Zealand product into the EU. This is followed by a review of four of New Zealand's major sheep meat markets with respect to changing trends in the value and volume for New Zealand sheep meat exports.

Chapter 4 looks at the changes in sheep meat products being exported by New Zealand over the past two decades. It begins by looking at how changes in hygiene and inspection practices contributed to better positioning the industry to diversify into value added processing. It then goes on to discuss the shift into chilled product and value added cuts and some of the technological and legislative changes that led to this shift. The section then concludes with an overview of some of the initiatives that have been brought in both inside the farm gate and processing sectors to improve the quality and consistency of product being produced.

Chapter 5 looks at changes in farm gate production and the impacts that they have had on New Zealand's sheep meat export industry. The section begins by providing a background on agricultural subsidies that were active in New Zealand between the late 1970s and early 1980s. From there, the discussion leads to the impact that the introduction and removal of the subsidies had on production and returns to farmers.

Chapter 6 looks at the repeated restructuring of New Zealand's meat processing sector with attention given to changes in domestic and international legislation, labour relations, raw material supply and processing efficiency. It begins by looking at the present organisational structure of the industry and the dominance of the three major meat export companies. It then goes on to look at industry changes in the 1970s as a result of the stricter hygiene regulations mentioned in the opening section of this document. This is followed by a discussion on further changes as a result of the de-licensing of the processing sector in the early 1980s and what this meant for smaller players trying to enter industry. The final three parts of this section look at the impact that changing labour relations, increasing use of technological innovation and increasing competition over stock had on the efficiency and financial viability of the industry.

Chapter 3
International Trade

3.1 Early influence of the United Kingdom

By the end of the 19th century the UK had become increasingly dependant on meat imports to sustain its growing population. On the other side of the globe, the colonies of New Zealand and Australia had a surplus of meat available but no practical way of moving the commodity back to the UK. There were some moderate successes in these early years however with 1870 seeing the first shipment of 842 cases of canned meat from New Zealand to the UK (McCrystal, 2004). Ten years later, the introduction of refrigerated shipping revolutionised the industry both on sea and on land.

In the late 1800s, early refrigeration technologies were being developed in Australia for use on the domestic meat market (Robinson, 2006) with the technology being adapted to achieve the first frozen shipment of meat from Australia to the UK in 1880. Two years later, the first consignment of frozen carcasses from New Zealand sailed out from Port Chalmers on the sailing ship *Dunedin*. The New Zealand consignment took three months to arrive and only one of the 4,931 mutton, beef and pork carcasses was rejected (Robinson, 2006). More impressively, the carcasses arrived in good condition and sold for approximately twice the price of what it would have fetched on the domestic market (McCrystal, 2004).

Following the success of this maiden venture, the meat trade with the UK began to grow with the focus being the export of whole carcasses of frozen fatty lambs. At the farm gate, this change meant an increase in stock numbers and a departure away from more traditional wool producing breeds to meat or meat/wool breeds. The meat processing sector also developed in response to this new industry with the number of operational freezing plants in New Zealand growing from 3 in 1882 to 21 by 1893 (Robinson, 2006).

Over the next century, New Zealand's agricultural and the agricultural processing sectors developed to service the UK markets. This relationship was further reinforced by preferential agreements with the UK through the Ottawa agreement in 1933 and bulk purchase agreements during the First and Second World Wars. During the late 1950s and early 1960s there were some threats to New Zealand imports from other competitors but the response from the UK was again to offer preferential access to New Zealand. By 1953, New Zealand's meat processing industry had grown to include 37 export slaughter houses, 38 abattoirs that had formal inspection processes and 267 rural slaughterhouses (Robinson, 2006) with the majority of New Zealand's export production and distribution being managed by UK based companies such as Vestey Group Ltd., Thomas Borthwick & Sons Ltd., and C.W.S. Ltd.

3.2 Changing market arrangements as a result of the United Kingdom joining the European community

By the 1960s, it became clearer that the UK would enter the European Community (EC) resulting in concerns that New Zealand trade would be seriously affected. In response, the New Zealand Meat Board introduced the Lamb Market Diversification Scheme applicable to all lamb exports. Under the scheme, 22 per cent of a company's export was to be sent to countries where no substantial market for New Zealand lamb, or particular class of lamb,

existed. The penalty for not meeting this quota was 2.5 cents per pound over the 22 per cent with an award of 0.25 cents per pound exceeded. This scheme reduced the influence of Vesteys, Borthwicks and C.W.S., who also had to conform to the scheme and diversify away from the UK market (Calder and Tyson, 1999).

By the time the UK entered the EC in 1973 exports to the UK had dropped from over 90 per cent to under 40 per cent of New Zealand's total export market (Calder and Tyson, 1999). Fortunately for the New Zealand economy, the potentially damaging effects of this change had been softened by the buoyant world markets of the time (Chamberlin, 1996). However, the UK was still a vital market for NZ with respect to dairy and sheep meat exports which were now subject to tighter import restrictions and competition from an increase in local production as a result of the UK adopting the EC's "Common Agricultural Policy" (CAP).

The CAP for sheep meat was one of the last to be introduced and came in to effect in 1980. Outside of the UK, this resulted in the introduction of subsides for sheep meat producers through an intervention price system. In the UK however, a system of direct payments in the form of an annual ewe premium, calculated as the difference between market and a fixed price, was chosen to support the sector. Whilst this was not as disruptive as some of the previous regimes had been, it resulted in the growth of sheep meat production and exports from the EU which subsequently created greater competition for New Zealand in the global sheep meat trade.

At the time the UK joined the EC, special arrangements had allowed for preferential access for New Zealand sheep meat exports as a transitional measure from 1973 to 1977. However, this was on the provision that New Zealand placed a voluntary restriction on exports of sheep meat to the EU. After this transitional period, export would then become subject to the EU's Common External Tariff (CET) of 20 per cent.

In 1980, three years after the end of the transitional arrangement, New Zealand agreed to limit exports of sheep meat to 245,000 tonnes to the EU in return for a lowering of the CET to 10 per cent. In 1989 the preferential access was reduced to 205,000 tonnes in return for a removal of all CET on sheep meat imports. Access increased in 1994 to 205,600 tonnes when the Canary Islands entered the customs union. A quota of 6,000 tonnes was given for chilled lamb within the overall quota in 1989 and this was to be increased by 1,500 tonnes per year. In 1993 and 1994 the agreements were rolled over awaiting the outcome of the Uruguay Round of the World Trade Organisation (WTO) talks.

Under the Uruguay Round, the preferential access was increased to 225,000 tonnes rising to its current level of 227,854 tonnes (New Zealand Meat Board, 2007a). Any imports in excess of this amount above have to pay an out of quota tariff of 12.8 per cent (New Zealand Meat Board, 2007a).

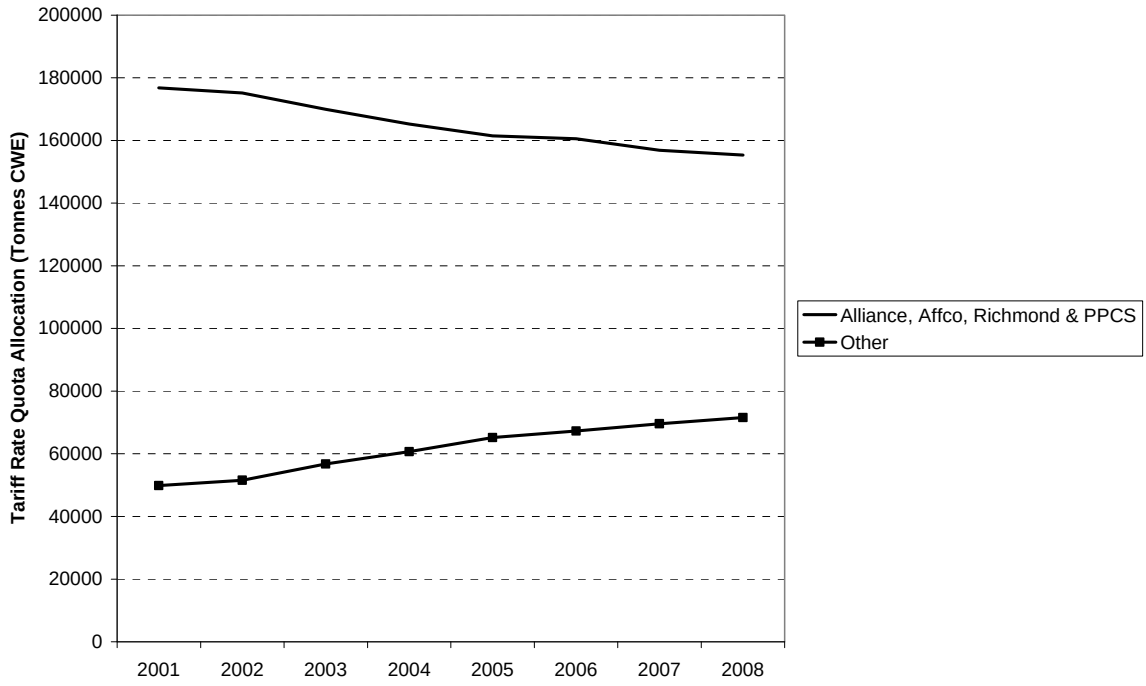
3.3 Role of the Meat Board in quota management

Formed in 1922, the New Zealand Meat Board was initially established to resolve problems resulting from export surplus following the end of supply contracts made with the UK during the First World War. Initially, the Board drew its authority from the Meat Export Control Act (1922) which gave it control over export licensing as well as provision to take total control over the marketing and distribution of New Zealand's meat exports. In addition to its licensing function, the Board has also been responsible for introducing 'industry good' initiative in attempts to steer the industry in directions that it saw being in the country's best interests.

1997 saw a legislative change in the role of the Board through the introduction of the Meat Board Act (1997). The Act removed the marketing and ownership provisions and amendments to the Act in 2004 saw the role of the Board change once again with the industry good function being transferred to Meat and Wool New Zealand.

Presently the board is responsible for three key areas. The first is the management of reserves of $85 million, of which, $55 million are held in reserve for use in an industry crisis with the remaining reserves held for industry good projects (New Zealand Meat Board, 2007b). The second is the continuation of the Board's role of administrating meat export licences. The final area is the management of the EU and USA quotas which were made possible through Section 33 of the Meat Board Act 2004.

Figure 3.1: European Union sheep meat and goat meat tariff rate quota allocations



Source: (New Zealand Meat Board, 2001; New Zealand Meat Board, 2002a; New Zealand Meat Board, 2003b; New Zealand Meat Board, 2004a; New Zealand Meat Board, 2004b; New Zealand Meat Board, 2006a; New Zealand Meat Board, 2006b; New Zealand Meat Board, 2007)

Under the Act, the New Zealand Meat Board may allocate shares of the EU Quota based on the production history of the applying company over the three prior seasons. As a result, access to the EU Quota is dominated by New Zealand's three largest processors as shown in Figure 3.1.

The Primary Producers Co-operative Society (PPCS) presently holds the largest share of the quota following its merger with Richmond Ltd in 2004. For the 2008 quota year, PPCS was awarded 65,528.2 tonnes, equating to less than 29 per cent of the available allocation (New Zealand Meat Board, 2007c). The total allocations awarded to the Auckland Farmers Freezing Co (AFFCO) and Alliance Group Limited (Alliance) has remained relatively constant but each with some slight growth. As Table 3.1 illustrates however, the sum of total allocations awarded to smaller players in New Zealand's sheep meat industry has shown constant growth over the past seven years negatively affecting the proportion awarded to PPCS.

Table 3.1: EU tariff rate allocation for sheep and goat meat

†Totals prior to 2005 treat PPCS and Richmond as the same entity

	Other (% Growth)	Affco New Zealand Limited (% Growth)	Alliance Group Limited (% Growth)	PPCS/Richmond† (% Growth)	Total
2002	51545.9 (2.3 %)	25345.9 (6 %)	59853.1 (4 %)	89955.1 (-1.7%)	226700
2003	56760 (10.1 %)	25399.9 (2 %)	58984.5 (-1.5 %)	85555.6 (-4.9%)	226700
2004	60682.5 (6.9%)	24743.5 (-2.6 %)	59563.5 (1.0 %)	80918.4 (-5.4%)	225907.9
2005	65199.7 (7.4%t)	24265.7 (-1.9%)	60553 (1.7%)	76676.6 (-5.2%)	226695
2006	67267.2 (3.2%)	25090.8 (3.4%)	62299.1 (2.9%)	73191.9 (-4.5%	227849
2007	69605.4 (3.5%)	25754.3 (2.6%)	61753.3 (-.9 %)	69352.7 (-5.2%)	226465.7
2008	71554.0 (2.8%)	27784.7 (7.9%)	62001.1 (0.4%)	65528.2 (-5.5%)	226866.0

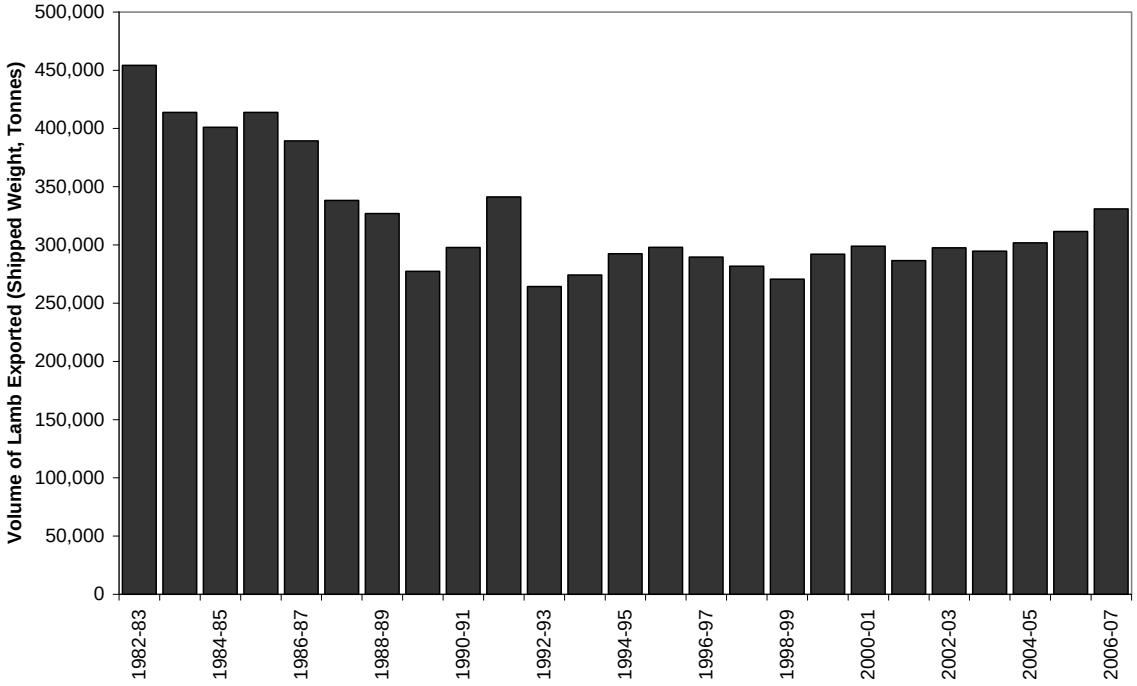
Source: (New Zealand Meat Board, 2001; New Zealand Meat Board, 2002a; New Zealand Meat Board, 2003b; New Zealand Meat Board, 2004a; New Zealand Meat Board, 2004b; New Zealand Meat Board, 2006a; New Zealand Meat Board, 2006b)

As part of the allocation scheme, the Meat Board sets aside 2 per cent of the total quota as a Reserve Quota Allowance (RQA) to provide access for new entrants or products into the EU market. For the 2008 quota year, this equated to 983.0 tonnes of the available quota. Out of this, only 488.0 tonnes were allocated as of 13 December 2007 (New Zealand Gazette, 13/12/07, No. 138, p3633).

3.4 International trade over the past ten years

In terms of production, New Zealand accounts for 6 per cent of the total world production of sheep meat with only 10 per cent of that production being consumed on the domestic market (Statistics New Zealand, 2006a). The remaining 90 per cent contributes 55 per cent to the global sheep meat trade (Statistics New Zealand, 2006a) and approximately 75 per cent of the worlds lamb meat trade (ABARE & MAF, 2006). In terms of export figures, 362,000 tonnes of sheep meat was exported in the year ending June 2006 with a value of $2.3 billion dollars free on board (FOB) (Statistics New Zealand, 2006b).

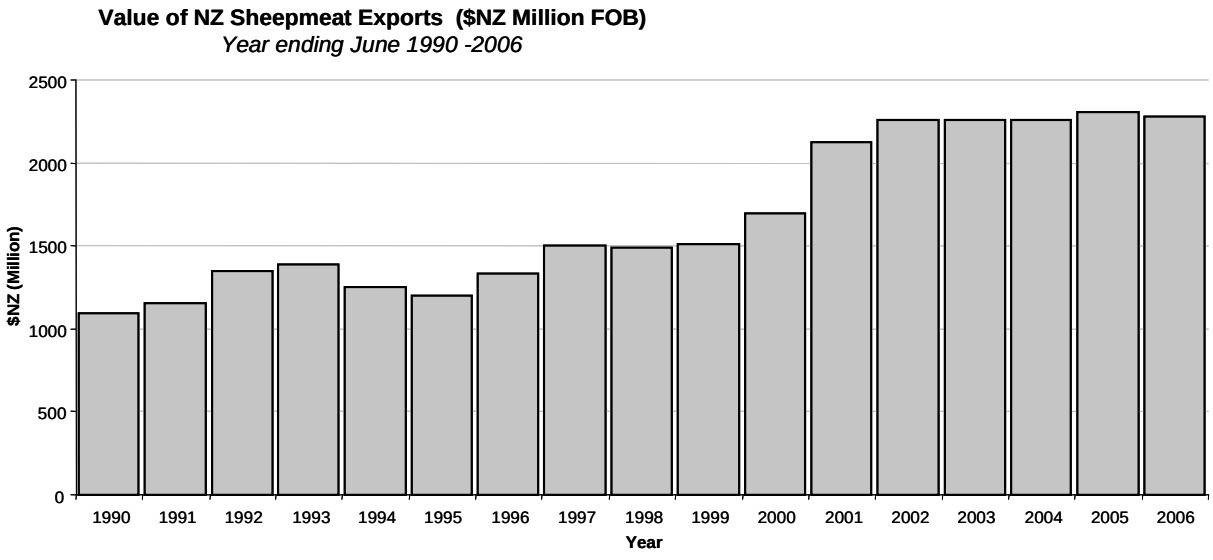
Figure 3.2: Volume of sheep meat exports 1982-2007



Source: Meat and Wool New Zealand Economic Service

Shown in Figure 3.2, the volume of sheep meat exported has shown little variation over the past 15 years averaging around 350,400 tonnes per annum. In contrast to the minimal variation in the quantity exported, the value of New Zealand sheep meat exports, as shown in Figure 3.3, has shown a dramatic increase from 1991. The most significant difference is between 2000 and 2001 where export value jumped by $427 million FOB. This increase can be accounted in part towards an increase in prices combined with a competitive exchange rate over this period. From 2002 onwards, both the tonnage and value of exports have levelled out with the value of exports averaging $2,247.5 million FOB for this period. The value of sheep meat exports is expected to rise with projections seeing the value of lamb exports exceeding $2.26 billion by 2009 (Ministry of Agriculture and Fisheries, 2005).

Figure 3.3: Value of sheep meat exports 1990-2006



Source: Statistics New Zealand

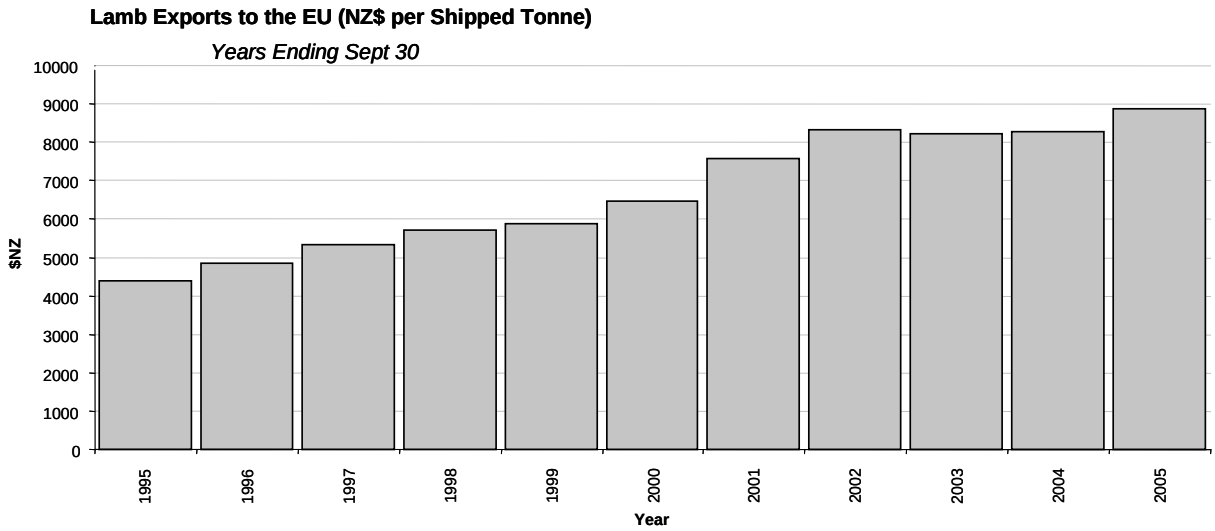
3.5 Major markets

3.5.1 Overview

Presently, the UK remains the largest export destination for sheep meat by both volume and value. Following on from this, the EU is the primary destination for New Zealand lamb with 149.9 kt (shipped weight cf. carcass weight equivalent which is the basis for the EU quota) of the commodity being exported to the EU in the 2005/06 season (ABARE & MAF, 2006). In terms of percentages, lamb exports to Europe accounted for 51 percent of New Zealand's total lamb export trade for the 2004/05 season (Statistics New Zealand, 2006a). Other Primary markets include North America, North Asia and the Pacific with imports of 44.5 kt, 39.2 kt and 24.5 kt respectively (ABARE & MAF, 2006).

3.5.2 EU markets

Figure 3.4: Value of lamb exports to the EU

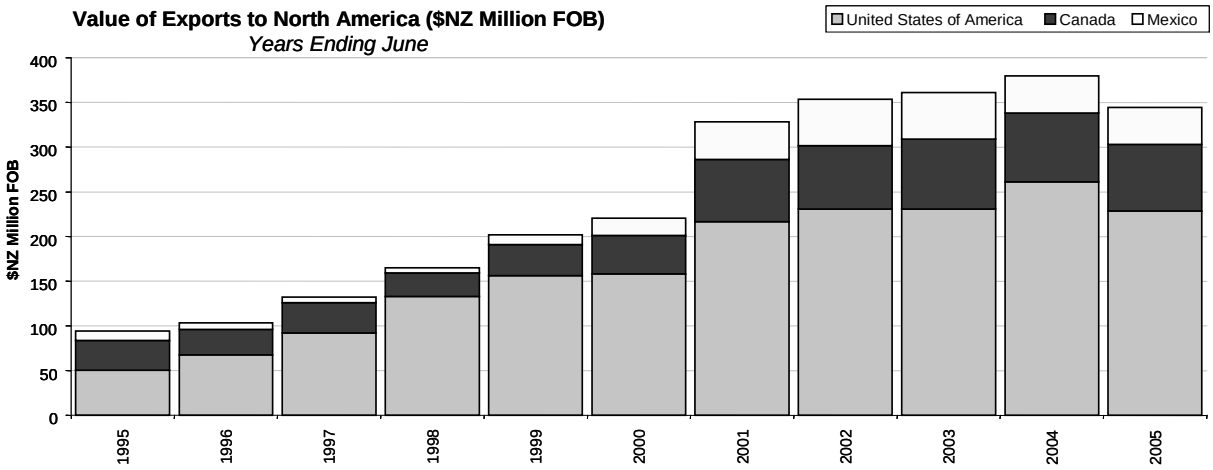


Source: Meat and Wool New Zealand, Statistics New Zealand in (Statistics New Zealand 2006a)

Looking specifically at the value of exports to the EU, the growth and levelling out in the value of exports discussed previously can also be seen when looking specifically at exports to the EU. Illustrated in Figure 3.4, it is possible to see a steady increase in the return per tonne of lamb shipped to the EU over the past decade. The increase in value between 2000 and 2001 shown previously in Figure 3.3 is still noticeable whereas it has remained relatively constant after 2002.

3.5.3 North American markets

Figure 3.5: Value of sheep meat exports to North America



Source: Statistics New Zealand

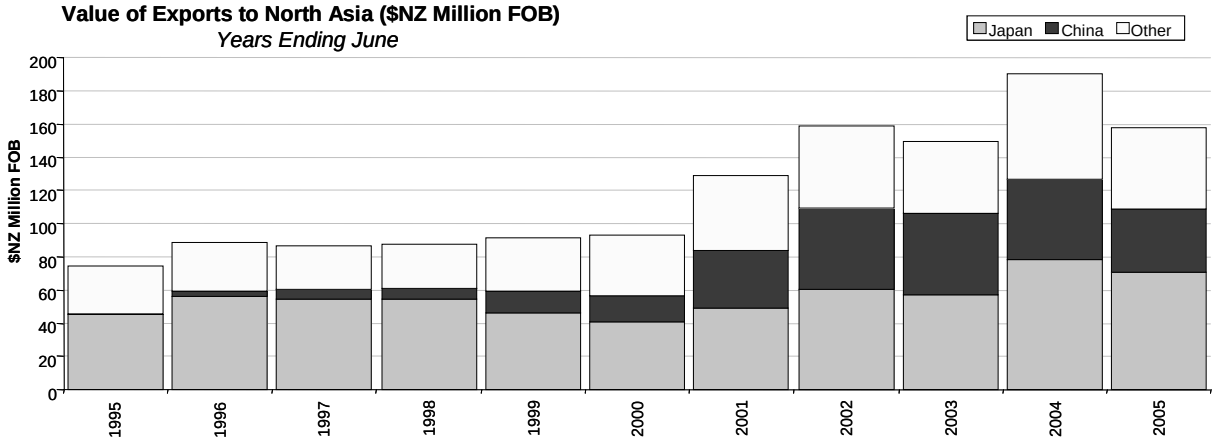
Shown in Figure 3.5, similar trends in higher value in trade with the EU and total export trade can also be seen in exports to New Zealand's North American markets. For 2005 as an example, the value of sheep meat exports to North America increased by 3 per cent on the previous years while total volume dropped by 9.9 per cent (Atkinson, 2006). For the year ending June 2005, The United States, Canada and Mexico were New Zealand's 3rd, 7th and 12th largest trading partners by value. The 211 per cent growth in value over the period 1995-2005 shows that the industry has been quite proactive in developing markets.

For a brief period between 1999 and 2001, access to the US for New Zealand sheep meat exports was subject to a tariff rate quota in response to heavy petitioning by US lamb producers on the impact that increased imports were having on the domestic market. Brought in as a safeguard measure to protect US lamb producers, the quota was initially set for three years and one day with a tariff of 9 per cent in-quota and 40 per cent out-of-quota to be reduced by 3 per cent and 8 per cent respectively over the following two years.

Both New Zealand and Australia appealed the quota to the WTO on the grounds that the US decision was in conflict with articles of the Safeguards Agreements drawn up in the 1994 Round of General Agreements on Tariffs and Trade (GATT). The WTO eventually sided with Australia and New Zealand and the US removed the safeguard tariffs on 15 November 2001.

3.5.4 North Asia

Figure 3.6: Value of sheep meat exports to North Asia



Source: Statistics New Zealand
NOTE: North Asia classified as China, Hong Kong, Korea-Democratic People's Republic of, Korea-Republic of, Japan, Macau, Mongolia and Taiwan.

Though less pronounced than trade with the EU and US, the value of trade with New Zealand's North Asia markets has also seen growth as shown in Figure 3.6 In the year ending June 2005, Japan and China were New Zealand's sixth and tenth largest sheep meat markets by value. The value of sheep meat exports to China has seen considerable growth over the past ten years from $0.56 million in 1995 to $37.8 million for the year ending June 2005. In total, export to the region has grown from $74.6 million in 1995 to $157.6 million with record trade in 2004 of $190.5 million FOB.

3.5.5 Middle East/Halal markets

Table 3.2: New Zealand sheep meat exports to solely Halal markets year ending May 2006

Market	Tonnes	FOB ($NZ Million)
Algeria	3877.40	11.30
Bahrain	172.40	1.60
Indonesia	33.90	0.17
Jordan	1543.70	5.60
Kuwait	556.20	3.20
Malaysia	6603.60	24.40
Oman	977.80	3.50
Saudi Arabia	11.50	41.20
Singapore	1608.90	85.50
UAE	795.70	4.40
Other Halal Markets	335.80	1.60
Total	16516.90	182.47

Source: Statistics New Zealand cited in (Meat Industry Association of New Zealand, 2006)

In 1979, the Meat Board secured a four-year contract for 200,000 tonnes of lamb to Iran (Robinson, 2006). With a dominant Islamic population, Iranian officials insisted that all meat exported by New Zealand to Iran was to be slaughtered in accordance to Halal practices. This included having to recruit accredited Muslim slaughter man, predominantly Fijian Indians

(McCrystal, 2004; Robinson, 2006), to perform the actual slaughter of the animal. The Federation of Islamic Associations of New Zealand (FIANZ) signed the first annual contract with the New Zealand Meat Producers Board (later the Meat Industry Association) in 1984 to provide certification for Halal slaughter men.

From this, New Zealand has built itself up to be the world's largest exporter of Halal slaughtered sheep meat and also exports Halal slaughtered beef (New Zealand Beef and Lamb Marketing Bureau, 1998). For the year ending May 2006, exports to solely Halal markets, such as the Middle East, contributed to 8 per cent of the volume and 5 per cent of the value FOB for all sheep meat exports (Meat Industry Association of New Zealand, 2006). Malaysia is presently the largest export destination for Halal products by volume (40 per cent); with Singapore (47 per cent) and Saudi Arabia (23 per cent) also being dominant markets by value (Table 3.2). There are also significant volumes of Halal lamb meat sold in both the UK and US.

3.6 Summary

While the UK remains a major trading partner with respect to New Zealand's sheep meat export industry, its influence on the industry's direction has reduced significantly since its entry into the European Community in the 1970s. Markets have since diversified in response to restricted access to New Zealand's traditional trading partner with North American, North Asian and Pacific markets becoming increasing important in the country's global sheep meat trade.

Overall, the volume of New Zealand's sheep meat exports has shown little variation over the past two decades whereas the value of the exports has increased significantly over the same period. As the following section will show, this change in value can be credited in part to increasing diversification of the products being exported.

Chapter 4
Product Differentiation

4.1 Hygiene and inspection

As stated in the previous section, New Zealand's sheep meat export industry was focused around the commodity trade of whole frozen carcasses from its inception until well into the mid 1980s. As a result of this, processing remained reasonably unsophisticated with the industry standard being the construction of large, multiple chain freezing operations built around commodity rather than value added production. This situation was to change however as the industry became increasingly exposed to international market forces and changing market demands.

The late 1960s saw the introduction of new hygiene and inspection requirements for two of the country's major markets. The US Wholesome Meat Act (1967) and the EC's Third Country Veterinary Directive (3CVD) set out strict, and sometimes contradictory standards, for the ante and post-mortem management of livestock destined for the respective markets. In the US, the focus of the inspection was more of a macro approach focused around 'clean' meats and processing where the EC's approach was more microscopic with the focus being the individual inspection of carcasses for species specific diseases. Companies had little option but to conform to these new standards or else loose their share in its two major markets.

The necessary upgrades to meet these new standards were progressively introduced through the early 1970s and 1980s and focused around the separation of edible and inedible processing, increased micro and macro carcass inspection and the removal of all permeable surfaces from handling and storage areas. As well as structural changes, the upgrades required an increase in the number of staff needed along the processing chain as the result of increased inspection and handling requirements. With mutton chains as an example, the labour per chain jumped from an average of 37 butchers and labourers to between 58 to 60 staff to meet the new processing requirements (Calder and Tyson, 1999). The associated costs of the upgrades had a dramatic impact on the structure and organisation of the processing industry, as discussed in greater depth in the following section, but ultimately lead to the better positioning of the nation as a quality producer of "clean" meat products.

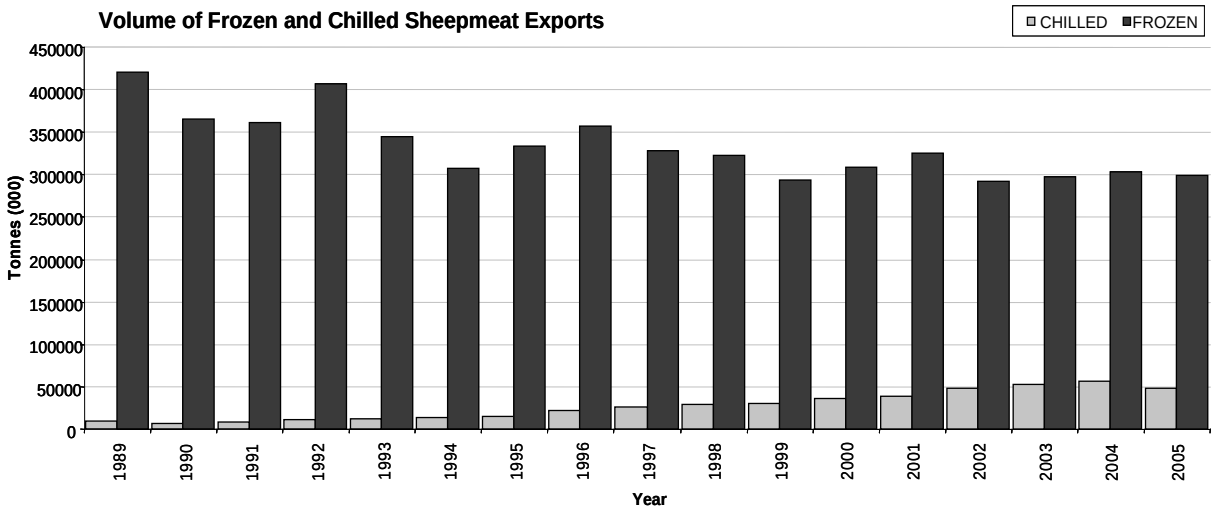
4.2 Shift into chilled meat

One area where these upgrades had the biggest impact was improving the capacity for processors to shift into chilled meat for export. Although New Zealand had been exporting chilled meats since the 1930s, the practice was still very much a fringe activity due to the high associated cost of insuring food safety during processing and transport. However, the upgrading of the plants resulted in increased monitoring of the cool chain and microbiological inspection of the meat which dramatically reduced the risk of food borne contamination. The later introduction of controlled atmosphere packaging (Captech) further reduced the risk of contamination by slowing the activity of aerobic bacteria within the processed meat. The use of this new packaging technology also had "flow on" effects on the quality of the meat and the cost effectiveness of transporting chilled products.

Using Captech meant that meat products could be held safely at between -0.5°C and -1.5°C for up to sixteen weeks after production. Considering that the bulk of New Zealand's chilled export was being air freighted at the time, the use of this packaging meant that the products could now be transported cost effectively by sea and still have several weeks shelf life once it reached its destination. Chilled shipping also had the added benefit of allowing the meat to age naturally in transit resulting in increased tenderness of the product. The result being that New Zealand could now produce value added meat products that could equal, if not surpass, the quality and tenderness of product produced within the domestic market of the export destination.

As shown in Figure 4.1, the volume of chilled exports has seen significant growth since the commercial release of the Captech packaging in 1988. Chilled exports as a proportion of the total tonnage exported has also grown over this time with chilled products accounting for just below 15 per cent of the total export tonnage for the years ending June 2002 to 2005.

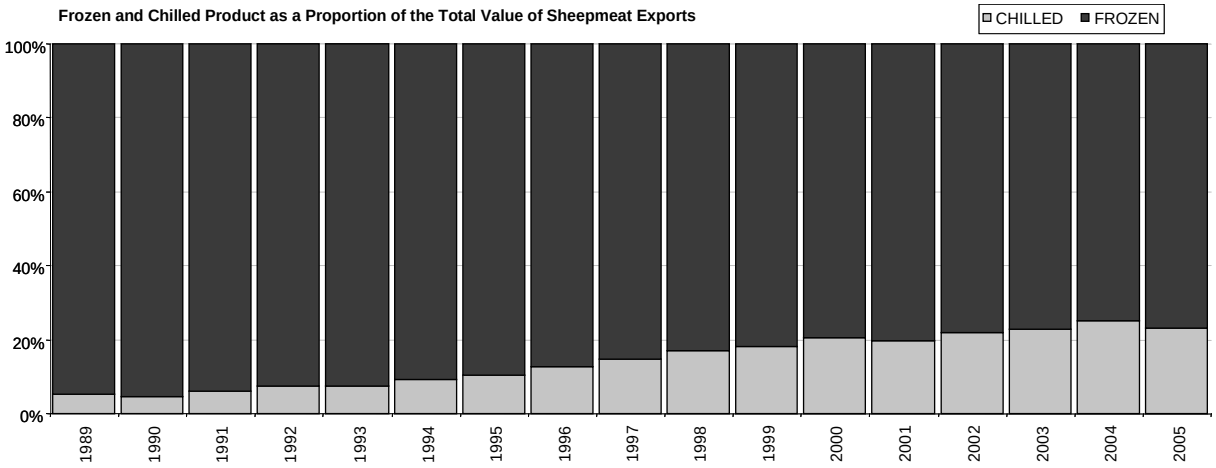
Figure 4.1: Volume of chilled and frozen sheep meat exports



Note: All Figures are for Year Ending June
Source: Statistics New Zealand

As expected, with an increase in volume the proportion of total export value generated by chilled products increases as shown in Figure 4.2. However, the value of chilled products as a proportion of total export revenue generated plateaus much earlier than the volume does. From 1999 to 2005, the value of chilled exports fluctuates around 20 per cent of the total FOB value of sheep meat exports peaking in 2004 at 25 per cent.

Figure 4.2: Frozen and chilled product as a proportion of the total value of sheep meat exports



Note: All Figures are for Year Ending June
Source: Statistics New Zealand

4.3 Shift into value added cuts

As with chilled products, the practice of producing value added and further processed cuts prior to export was still very much a fringe activity by the early 1980s. Outside of the few boutique processors, further processing prior to export was generally regarded as not being cost effective (Calder and Tyson, 1999) and was usually reserved as an attempt to salvage saleable parts of a carcass that had been damaged prior to, or during, the slaughter process (Martin, 2004). Even then, this additional processing was crude and usually involved quartering the stock with a high speed band saw to salvage the undamaged parts of the animal (Martin, 2004). However, the situation was to change as a result of the changing market environments and the actions of the New Zealand Meat Board who, between 1982 and 1985, had exercised their statutory right to take control of the national kill.

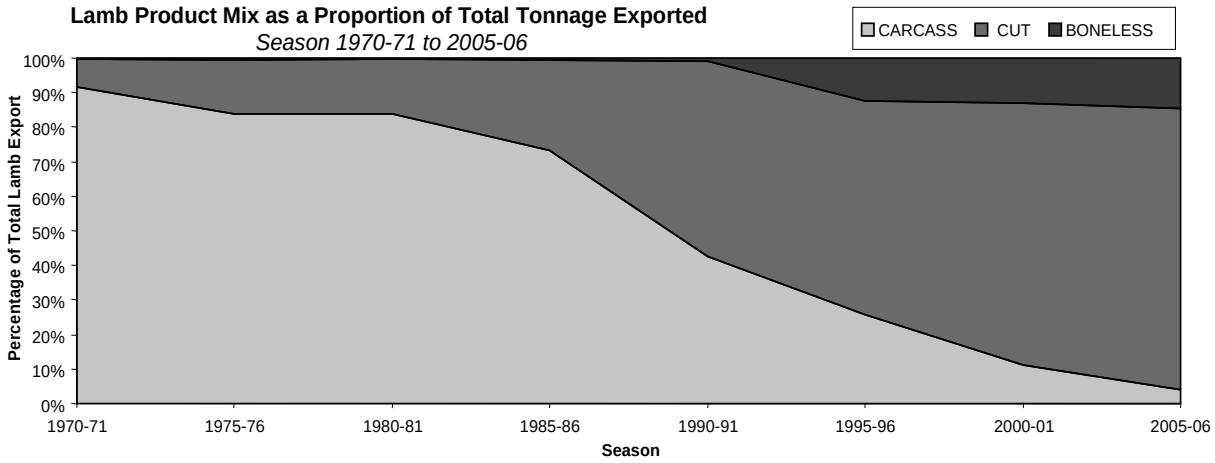
One of the key influences in the shift into value adding was the introduction of the Lamb Carcass Purchase Agreement for Further Processing (LCPAFFP) scheme in 1982 for 2 yeas. Introduced by the Meat Board, the scheme allowed for exporters to buy back carcasses from the board at a favourable price on the provision that the carcass then be further processed into value added cuts for export (Calder and Tyson, 1999). The shift in product mix cannot be solely attributed to the LCPAFFP scheme as there were several other factors surrounding the industry in the mid 1980s that had seen further processing becoming a more economically viable option. There was also an export incentive scheme for product processed beyond the primal cuts.

Of these factors that saw a shift into further processed product, one of the greater influences was that value adding practices allowed exporters to maximise returns from New Zealand's restricted access markets like the EU. Further processing also allowed for more efficient use of containerised shipping as one container could hold 15 tonnes of boneless product compared to 7 tonnes of carcass (Calder and Tyson, 1999). The introduction of controlled atmosphere and vacuum packaging also made it easier to package individual cuts for transport. In addition to making it easier to transport, Captech also improved the safety and the quality of the product as has already been discussed.

Since the mid 1980s, there has been a progressive shift away from shipping whole carcasses (Figure 4.3). The greatest change can be seen in the drop in the export of whole carcasses

from just over 90 per cent of the total export mix in the 1970/71 season to 3.9 per cent of the total product mix for the 2005/06 season. The biggest growth can be seen in the export of lamb as primal or sub-primal cuts moving from less than 10 per cent in 1970-71 to 81.5 per cent of the export for the 2005/06 season. Although less significant, the export of bone out and boneless lamb cuts has also seen an increase with the commodity accounting for 14.6 per cent of the export mix in 2006.

Figure 4.3: Export lamb product mix as a percentage of tonnes exported



Source: Statistics New Zealand and Meat and Wool New Zealand

4.4 Quality initiatives

In addition to the moves into value adding and chilled products, the 1980s onwards saw an industry shift to improve the quality of New Zealand's meat exports. At the start of the decade, the high production levels at the farm gate and within the processing industry led to an increasing deterioration in the quality of the product being exported. With increasing pressure from the UK, the Meat Board began to push for the industry wide introduction of accelerated conditioning and aging (AC&A) practices in processing to bring greater consistency to the quality of the meat being exported. Although there was some resistance by companies due to the required capital expenditure and increased staffing needed to integrate the technology into their plants, the change saw significant benefits to the quality of exports particularly in relation to the frozen trade.

Blast freezing for lamb had been introduced in 1949 and dramatically reduced the time that it took to freeze a carcass down from between 18 and 72 hours to between 12 and 16 hours (New Zealand Beef and Lamb Marketing Bureau, 1998). However, it was not until the mid 1950s that the negative affects that freezing had on the quality of the lamb were beginning to be understood. The biggest problem faced was that freezing the sheep meat prior to *rigor mortis* setting in caused the animal's muscles to irreversibly contract. This process is referred to as 'cold shortening' and causes the carcass and any cuts derived from the animal to become tough to the point of being inedible. Later research showed that any prolonged exposure to temperatures less than 7°C prior to the animal reaching full rigor resulted in the same effect (New Zealand Beef and Lamb Marketing Bureau, 1998).

Left to occur naturally, a sheep carcass will pass through rigor between 18 and 24 hours after slaughter. The associated cost of holding a carcass for this time meant that natural ageing was not a financially viable option for reducing the chance of cold shortening. Holding the carcass at temperatures above 7°C for this length of time also created potential food safety problems.

A more economic solution was to be found through research conducted by the Meat Industry Research Institute of New Zealand (MIRINZ) into the electrical stimulation of muscle tissue after slaughter.

Passing a current through the carcass shortly after slaughter resulted in a dramatic reduction in the time that it took for the animal to pass through to full *rigor*. The stimulation used up the animal's remaining stores of muscular energy and saw the conditioning time needed for sheep meat reduced from a maximum of 24 hours down to within 2 to 6 hours after slaughter. Although this change to the processing practice played a significant part, there were also changes at the farm gate and transport sectors that saw further benefits to the quality and tenderness of the products being exported.

The introduction of meat breeds of sheep into New Zealand from Europe such as the Texel and Finn, in addition to the increased use of ultrasound to select leaner breeding stock, resulted in exports becoming an increasingly leaner commodity. Better handling of the stock prior to slaughter also improved quality following a greater awareness of the impact that animal stress both on the farm and during transport had on meat tenderness. Breeding practices had also seen an increase in live weight at slaughter and lambing percentages that, as is discussed later in this document, were to have significant impact of both the efficiency of the processing industry and the financial performance of the industry as a whole.

4.5 Summary

The export product mix of New Zealand's sheep meat industry has diversified significantly over the past two decades. Where global trade prior to the 1980s revolved around the commodity trade of whole carcasses, exports have now shifted into further process and chilled product.

This change can be attributed in part to improved hygiene and inspection practices in the processing sector that better positioned the industry to insure the food safety of chilled meat exports. The introduction of controlled atmospheric packaging in the late 1980s also improved the feasibility of chilled exports by providing a way to safely and economically transport chilled product by sea.

Where growth in chilled exports has been slow but constant, the growth in exporting products as primal or sub primal cuts has been dramatic over the past two decades. This can be attributed in part to actions taken by the New Zealand Meat Board in promoting further processing through the Lamb Carcass Purchase Agreement for Further Processing Scheme. Other influences in the shift into exporting cuts rather than whole carcasses include the economic benefits of reduced freight costs, and a shift to maximise returns from restricted markets such as the EU.

In addition to the diversifying into value added and chilled product, there has also been a push for improving the quality of the product that is being exported. For example, the introduction of accelerated conditioning and aging and improved stock management and handling prior to processing has achieved increasing tenderness and consistency in what is a highly variable raw product. In addition to improving the quality of product exported, changes inside the farm gate have also led to the improved efficiency of the industry as a whole as will be shown in the following section.

Chapter 5
On-Farm Production

5.1 Subsidies and support

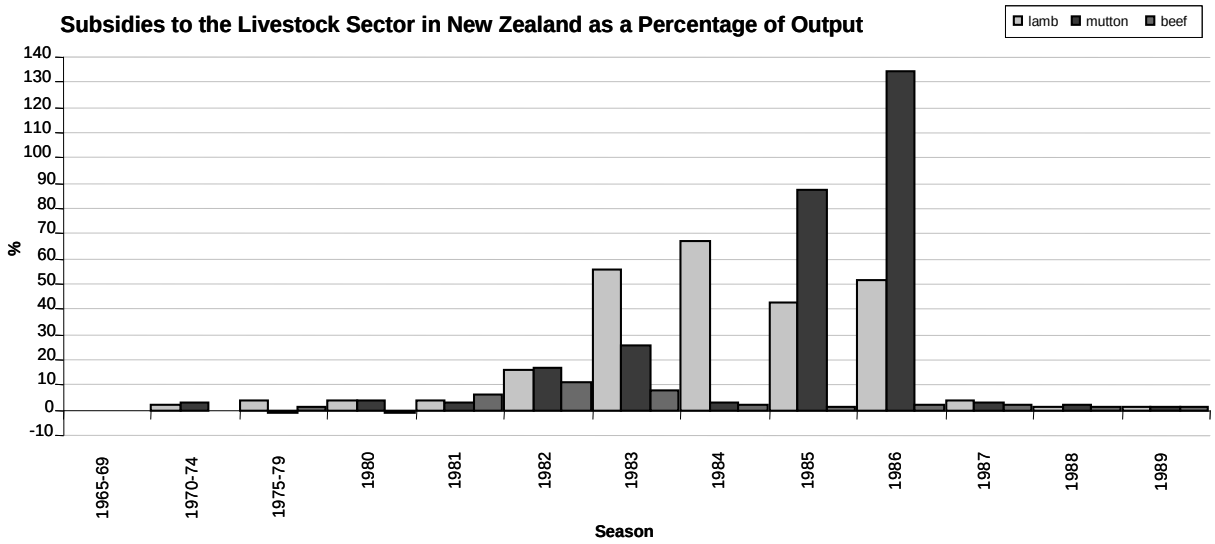
New Zealand had a relatively high degree of regulation throughout its economy prior to 1984. With a change in government and the country in financial crisis, the following years saw a liberalisation of the economy which has been quoted as being "faster, further and across a broader front than in any other country" (Bale, 1998). Central Government removed most financial controls, floated the country's exchange rate, undertook major privatisation of state enterprises, reduced labour market legislation and removed tariff and import regulations. Most significantly for this discussion, this era also saw the removal of subsidies provided to the country's pastoral agriculture sector.

This support had remained relatively small until the mid to late 1970s. However, by the 1980s the Government had introduced a range of policies including incentives for land development, concessionary livestock valuation schemes, subsidised credit for farm purchase, tax concessions and fertiliser subsidies. However, it was the introduction of deficiency payments for returns from livestock that had the greatest impact.

The most significant of the subsidies during this time was the supplementary minimum price schemes (SMP) for pastoral output introduced in 1978. The schemes involved Government setting a guaranteed pricing schedule for outputs of beef, lamb, dairy and wool product at the start of each season. If international market prices for the various commodities fell below this price, then farmers would then be paid the difference. The ways that SMPs were applied varied across the different commodities with the supplement acting as a deficiency payment with respect to wool and dairy and as an export subsidy in the case of sheep meat and beef. The way that the scheme was applied in the case of sheep meat had dramatic impacts for the domestic market including pushing domestic prices for sheep meat "up to export prices plus the level of subsidisation" (Tyler and Lattimore, 1990).

Of the total amount of assistance paid to sheep meat and beef producers, including intermediary parties, during this time the greatest proportion of support went to the sheep sector.

Figure 5.1: Subsidies to the sheep & beef sectors for meat in New Zealand as a percentage of output



Source: Statistics New Zealand (Reynolds and Moore 1990)

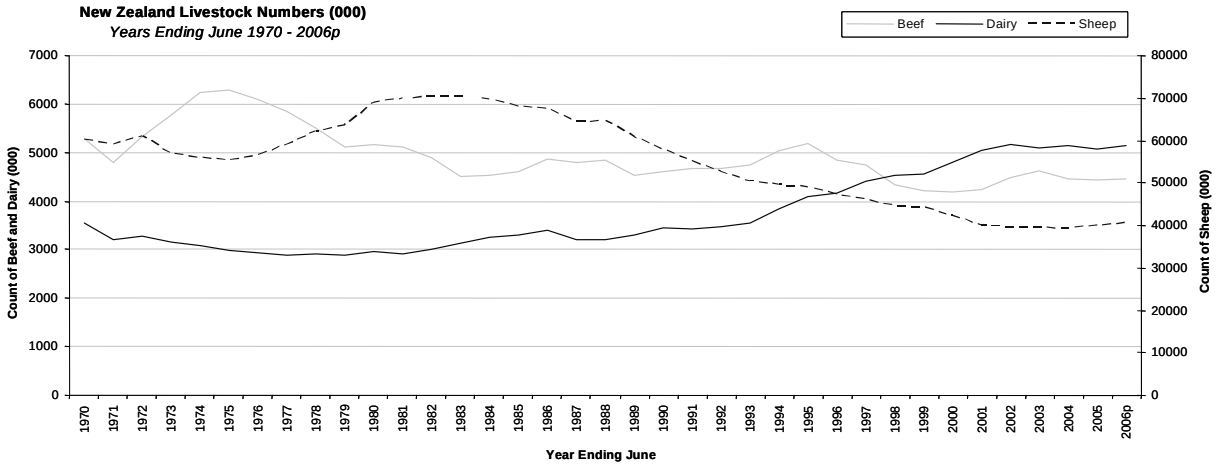
Figure 5.1 illustrates these subsidies as a percentage of output for each of the three main meat products; lamb, mutton and beef. This highlights again the relative short duration of the subsidies and shows the importance of subsidies to the sheep sector. The assistance to mutton in the 1985/86 season actually exceeded the market value of the animal due to the cost of processing being more than the value of the meat that was produced (Reynolds and Moore, 1990). By 1983 it was acknowledged that the level of subsidisation was unsustainable due to falling international prices (Tyler and Lattimore, 1990). The result being that it was decided that almost all subsidies were to be wound down at the end 1983/84 killing season. With respect to the sheep meat industry, a transitional arrangement of a lump sum payment in lieu of SMPs was made for the 1984/85 killing season with the last payment for sheep meat occurring in September 1986.

5.2 Changes in the national flock

5.2.1 Population

The subsidy era of the 1970s through to the 1980s saw a rapid increase in national flock numbers. These numbers peaked in 1982 at 70.3 million sheep and then steadily declined through to 2002 where they stabilised at just under 40 million. A considerable proportion of this decrease can be credited towards the removal of subsidies but there were several other factors that contributed to the overall decline over this time. Figure 5.2 shows that as sheep flock numbers decreased, there was a steady increase in dairy farming from the mid 1980s onwards as farmers exited sheep production. The beef herd also shows slight growth as sheep numbers begin to decline but then drops to be exceeded by dairy from 1997 onwards.

Figure 5.2: Livestock numbers in New Zealand (000)

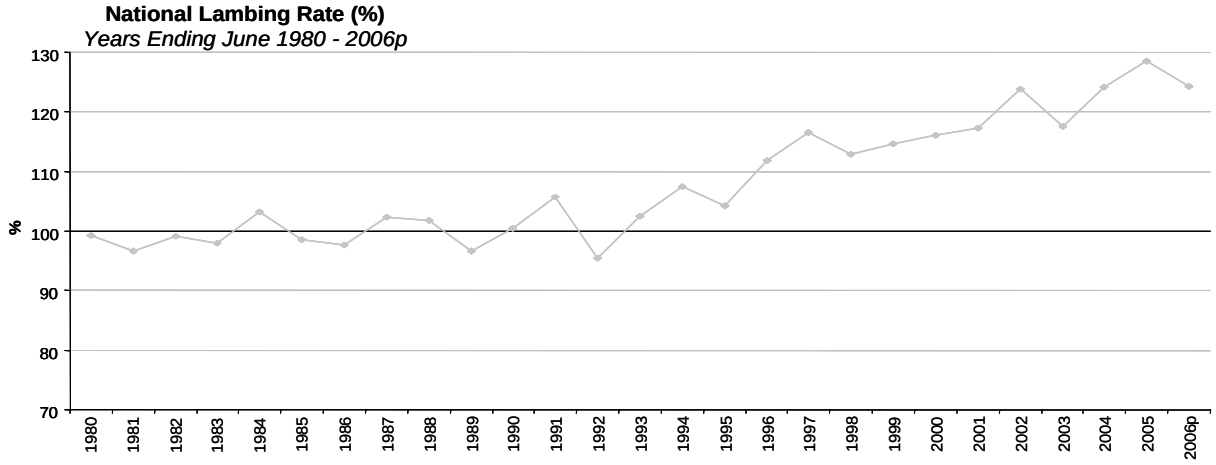


Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.2.2 Increased lambing

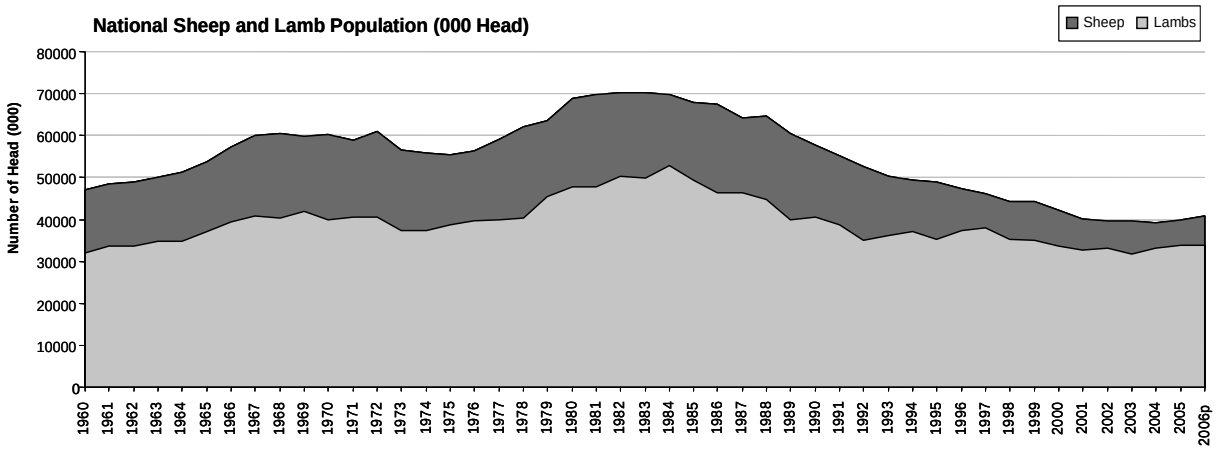
Although stock rates increased (from 1980 through to 1990), lambing rates remained relatively constant (Figure 5.3). However, increased use of on-farm technologies and the introduction of more fecund breeds such as the Finn saw an increase in lambing percentages from the early 1990s. Looking at Figure 5.4, this increased lambing rate resulted in the number of lambs within the national flock remaining relatively constant although the number of sheep dropped.

Figure 5.3: National lambing rate



Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

Figure 5.4: National sheep population and lambs born

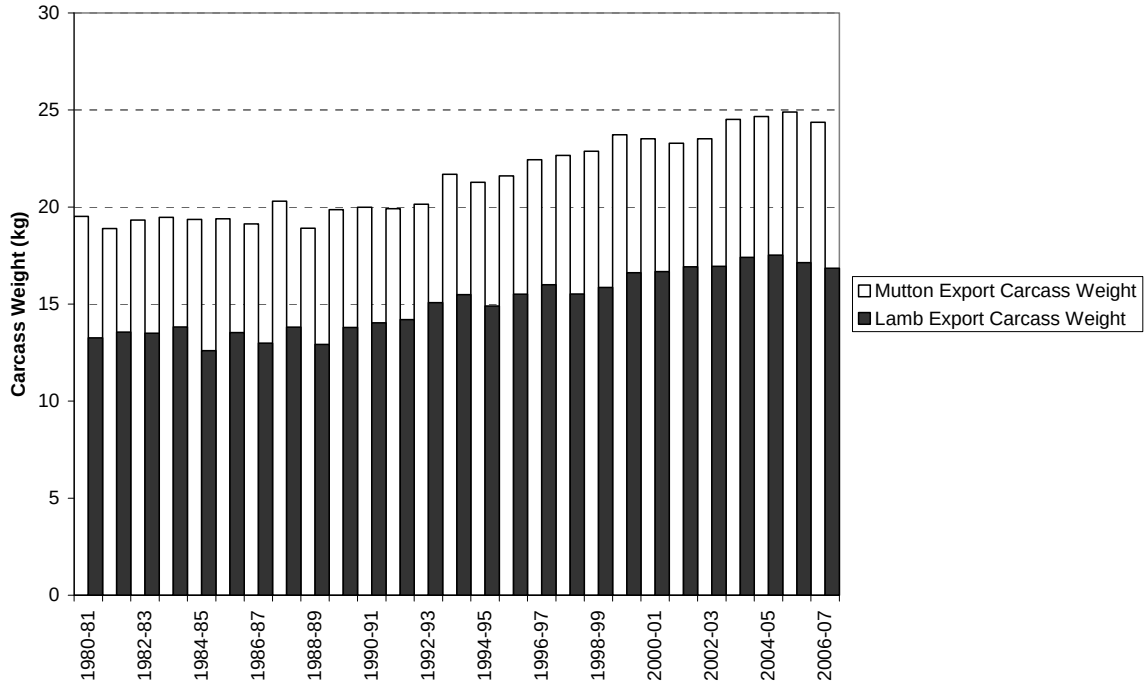


Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.2.3 Increased weights

One negative effect of the subsidy era was that livestock was being farmed at high stocking rates, resulting in lower overall live weights. Weights for both mutton and lamb remained relatively constant through out the 1980s. However, the use of scales, ultrasound and selective breeding practices has led to an increase in the average weight of the lambs being produced from the early 1990s onwards (Figure 5.5). Improved subdivision, pasture performance and quality have also contributed significantly. Mature ewe live weight has also increased significantly.

Figure 5.5: Export carcass weights for mutton and lamb

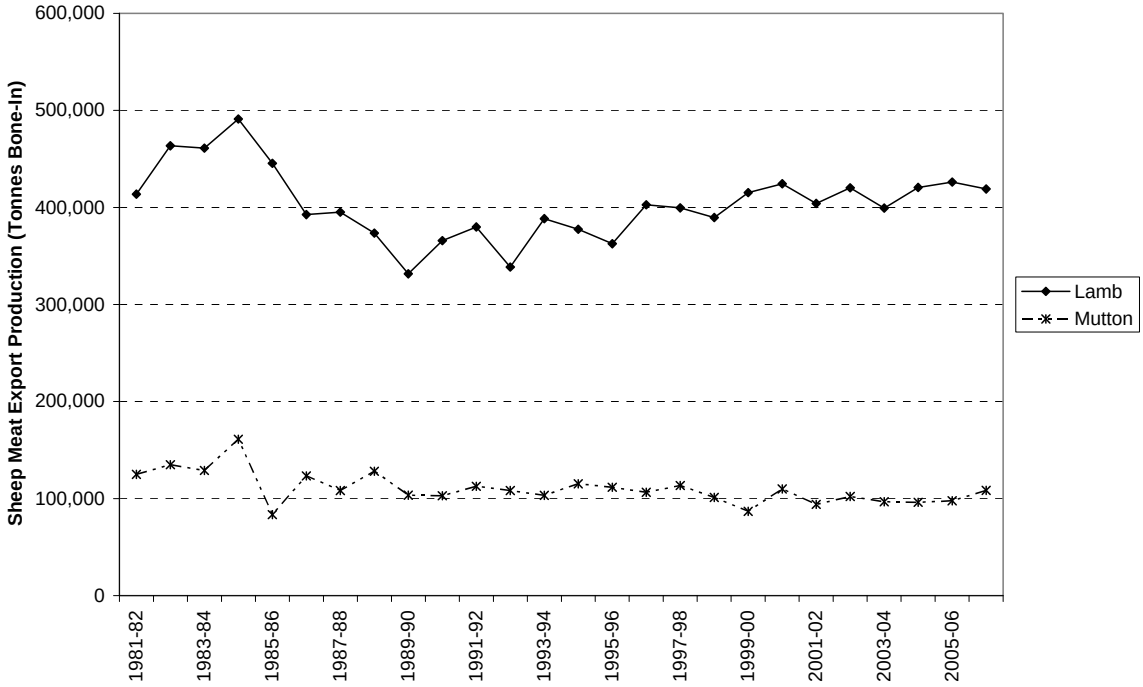


Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.2.4 Export production

The flow on effects for export from the removal of subsidies as well as increased stock weights and lambing percentages are shown in Figure 5.6. With respect to the removal of subsidies, production for both mutton and lamb peaked in the 1984/85 season as farmers took advantage of transitional subsidies to reduce their flock size. From there, mutton export production showed a steady decline from the 1984/85 season onwards. In contrast, from the early 1990s there was a steady growth in the production of lamb that can be attributed to both increased carcass weight and diversification into value added products.

Figure 5.6: New Zealand lamb and mutton production

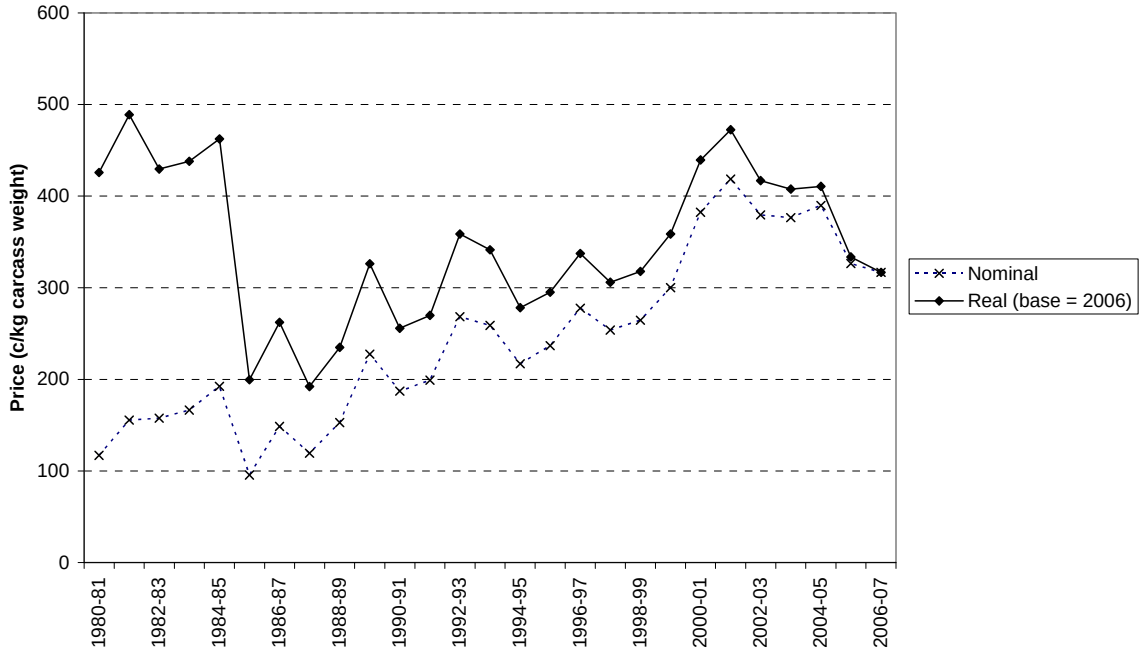


Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.2.5 Impact on prices

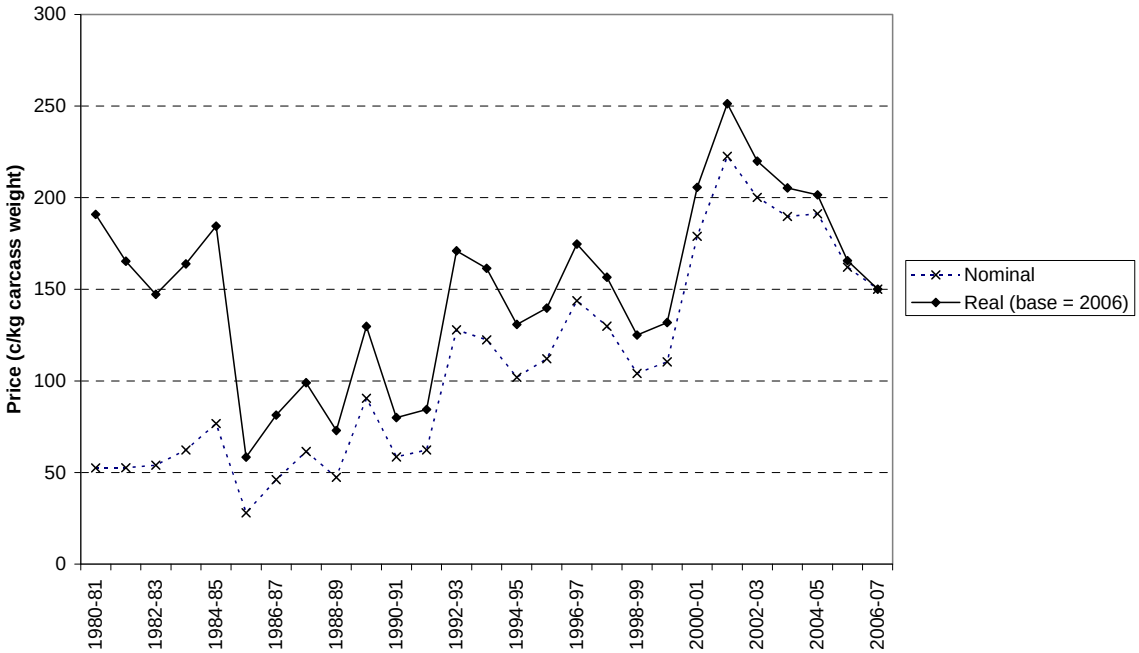
The impact of the removal of subsidies on returns to farmers is illustrated in Figures 5.7, 5.8 and 5.9. The 1985/86 season sees the returns from lamb fall to 55 per cent of the previous season with mutton dropping to 60 per cent and beef to 85 per cent. Prices recovered the following year that can be accounted in part to the lower value of the New Zealand dollar. Note that the New Zealand dollar was floated in March 1985.

Figure 5.7: Prices for lamb in New Zealand



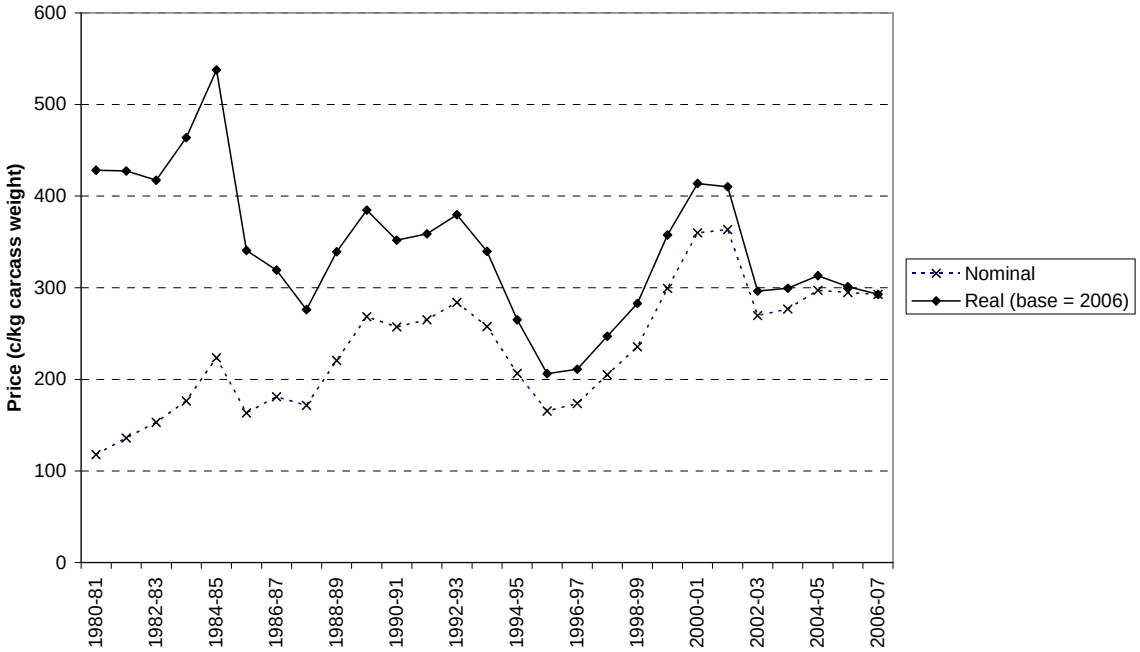
Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

Figure 5.8: Prices for mutton in New Zealand



Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

Figure 5.9: Prices for beef in New Zealand



Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.3 Returns to farmers

5.3.1 Changes in price per head and per kg

The prices per head received by farmers are shown in Figure 5.10. This shows the growth in returns following the removal of extensive government subsidies in the 1984/85 season. Since the 1985/86 season, returns to farmers per head and per kg have shown positive growth albeit showing greater fluctuation as a result of being exposed to international market forces and the floating exchange rate. The most significant growth in both figures can be seen between the 1998/99 and 2001/02 seasons where prices jump from $41.95 per head for lamb and $23.82 per head for mutton to $70.82 and $51.84 respectively. The price for lamb has since fallen about $18 from its peak.

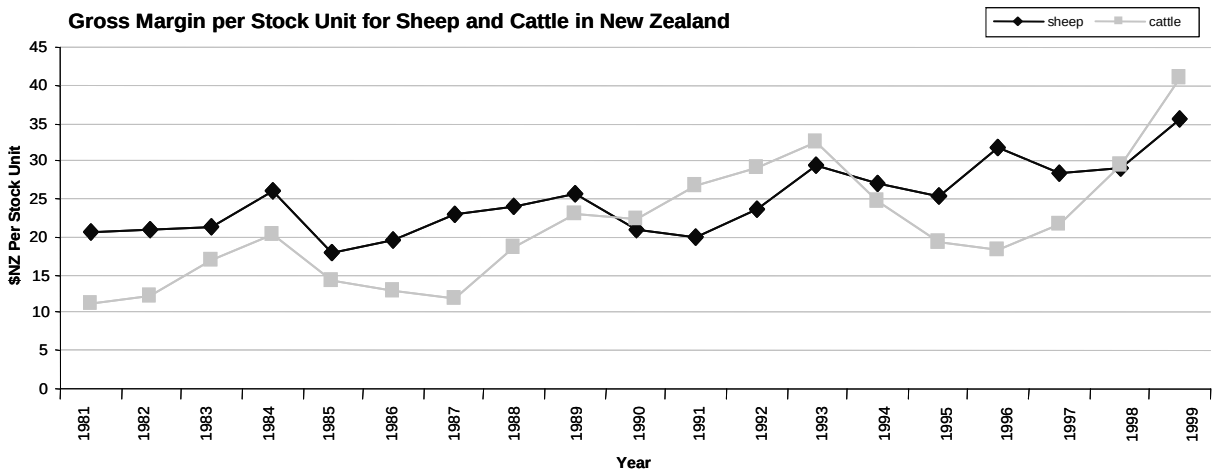
Figure 5.10: Prices per head to farmers for mutton, lamb and beef

Source: Meat & Wool New Zealand Economic Service [online: http://www.nzmeatstats.co.nz/ Accessed 27/04/07]

5.3.2 Changes in gross margin for sheep and beef

A change in the amount of subsidy in New Zealand is not always reflected in changes in gross margin. Gross margins per stock unit are shown in Figure 5.11. A stock unit is defined as a 55 kg live weight ewe rearing one lamb to a weaning weight of 25 kg live weight, or approximately 550 kg DM. These again reflect the fall after the reform period and interestingly show a greater fall for cattle until 1987 when compared to sheep.

Figure 5.11: Gross margin per stock unit for sheep and cattle in New Zealand

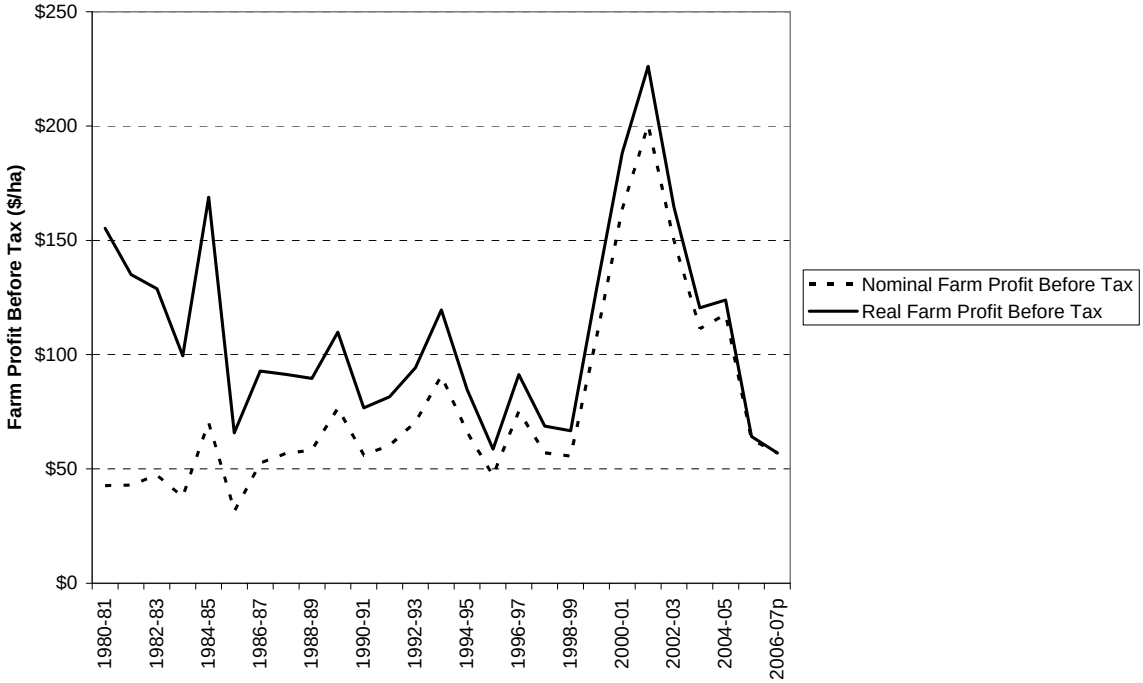


Source: NZ Meat Board

5.3.3 Farmer profitability

Sheep (and beef) farmer profitability from operations is typically low at approximately 2 per cent return on assets. Figure 5.12 below shows farm profit per hectare 1985/86 to 2006/07. The significant decline in strong wool price has been a significant contributor to the relative decline in sheep and beef farmers' profitability. Sheep historically provided two strong revenue streams, but this is no longer the case (see Table 5.1).

Figure 5.12: Farm profit before tax per hectare (real base year = 2006-07)



Source: Meat & Wool New Zealand Economic Service. Sheep and Beef Farm Survey, All Classes

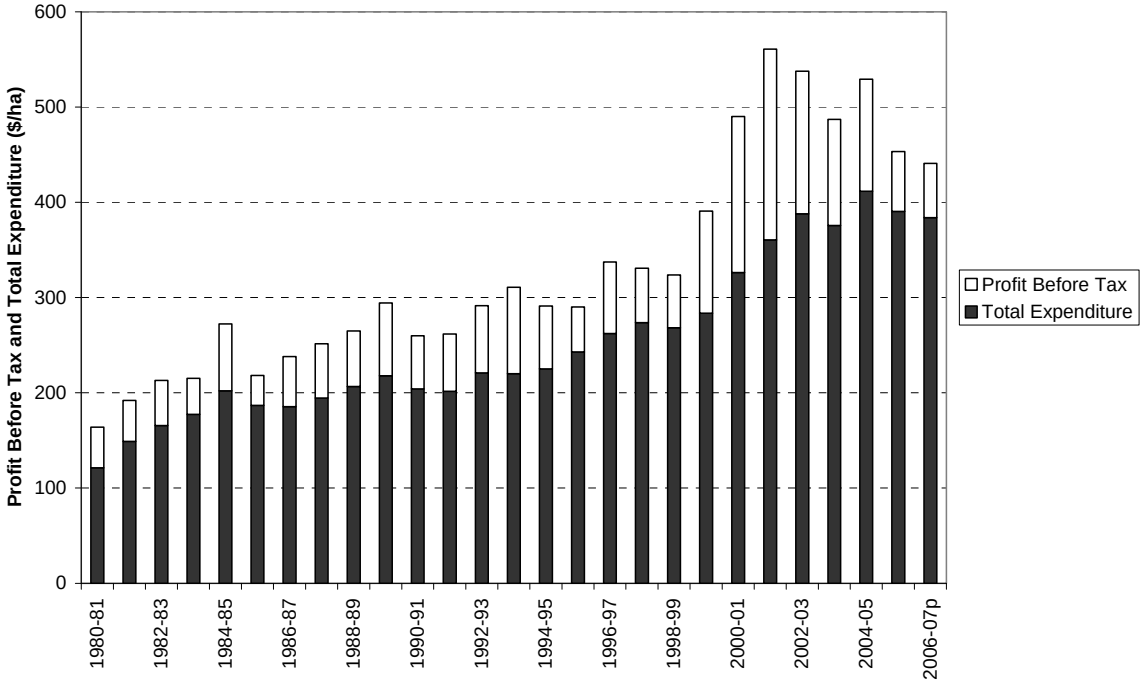
Table 5.1: Contribution of wool to sheep farmer income and New Zealand export earnings.

Year (July 1 to June 30)	Average gross wool income/ha (% of gross income/ha)	NZ "free on board" export earnings from wool (% total NZ export earnings)
1974/75	$20 (35%)	$262m (17%)
1979/80	$64 (42%)	$942m (19%)
1984/85	$96 (35%)	$1,475m (13%)
1989/90	$105 (36%)	$1,316m (9%)
1994/95	$85 (29%)	$1,253m (6%)
1999/00	$68 (17%)	$801m (3%)
2004/05	$77 (15%)	$972m (3%)

Source: Meat and Wool New Zealand.

Farm expenditure has increased similarly to gross income. This has meant that farm profit before tax has not increased over time with the exception being during the period of very high product prices during the early 2000s (see Figure 5.13).

Figure 5.13: Farm profit before tax and total farm expenditure per hectare. The top of the bar represents gross farm income per hectare.

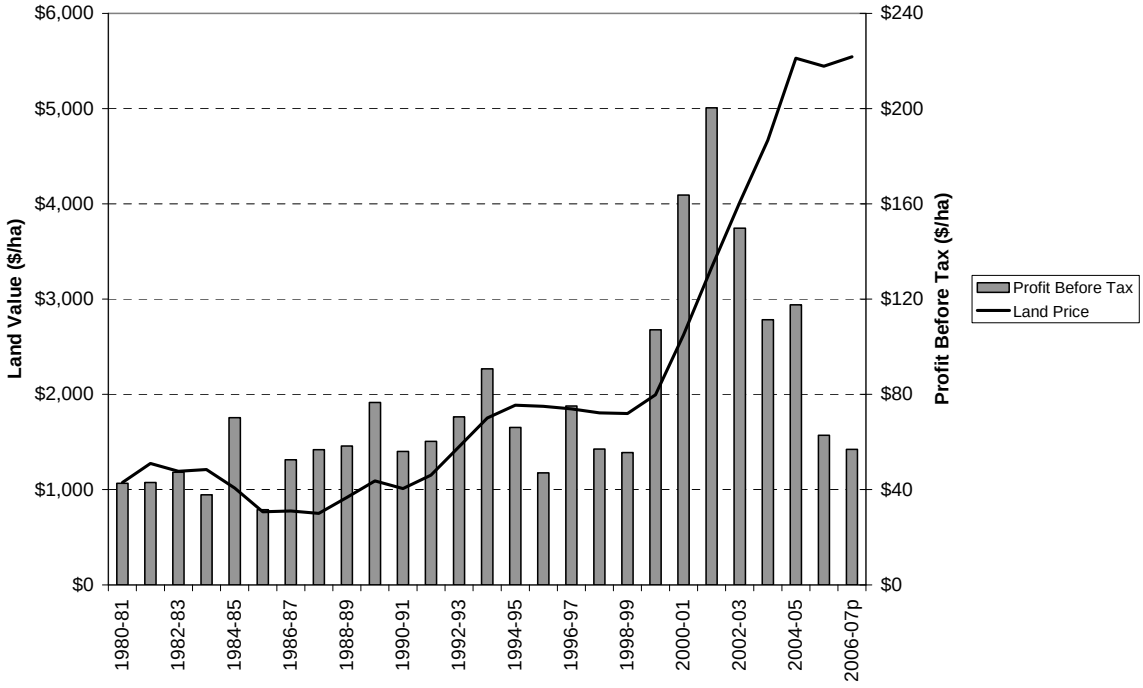


Source: Meat and Wool New Zealand Economic Service. Sheep and Beef Farm Survey.

5.4 Farm land value

Figure 5.14 shows that land value appreciated strongly in response to sheep and beef farm profitability in the early 2000s. It has continued to rise even though profitability has declined markedly. Much of this further increase is due to the opportunities available associated with dairying.

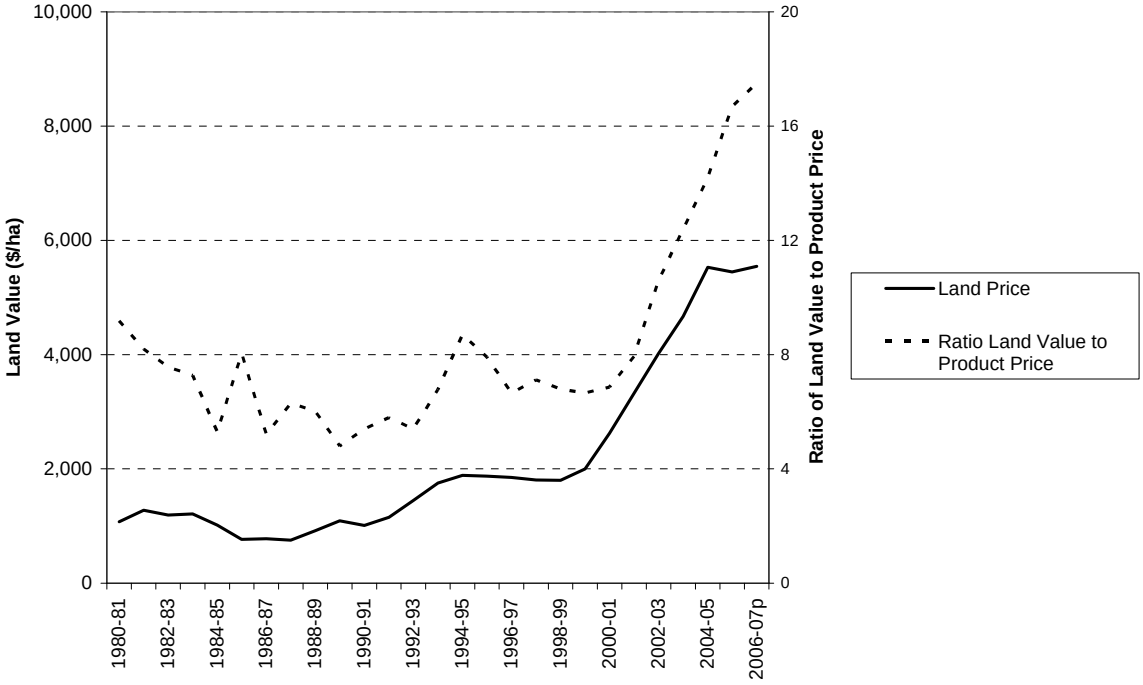
Figure 5.14: Land value per hectare and farm profit before tax per hectare.



Source: Meat and Wool New Zealand Economic Service.

The ratio of land value to product price has increased significantly, which suggests that land value has appreciated ahead of rises in product price (see Figure 5.15).

Figure 5.15: Land value per hectare and ratio of land price to product price (lamb).



Source: Meat and Wool New Zealand Economic Service.

5.5 Impact on number of farms

For all types of farm in New Zealand, the number of farms has increased especially as smallholdings have risen in importance. From 1978 to 1981 the total number of farms increased by 3,114 despite the fact that the number of sheep and beef farms fell by 7,848. Over the period 1981 to 1984 the number of sheep and beef farms decreased, in total, by 531. Whilst over the same period the total number of farms in New Zealand increased by 4,118, the largest increase being in horticultural farms. From 1984 to 1987 livestock farmers in total did increase but by a relatively small amount, with large increases in smallholdings compared to the fall in the larger sizes. From 1987 to 1990, sheep and beef farms fell by over 4,500, with rises in the number of dairy and horticultural farms. The change in sheep and beef farm numbers and the associated increase in farm size was driven by the need to achieve economies of scale.

5.6 Summary

Incentives designed to increase livestock numbers introduced in the late 1970s resulted in rapid growth in the national sheep flock. By the early 1980s, the level of support was seen by New Zealand's incoming Labour government to be unsustainable given the economic environment of the time and subsidies were removed as part of economic reforms throughout the country. This resulted in a steady downturn in the national flock until numbers begin to level out from 2000 onwards.

In an environment where quantity of production was promoted, little attention was paid to improving the quality and productivity of the national flock. This was evident by the reasonably static lambing percentages and average carcass weights during the early 1980s. However, from the early 1990s onwards both lambing rates and average carcasses weights increased as a result of the increased use of on-farm technologies and selective breeding practices.

The result of the increased lambing percentage and greater export carcass weights has been that the industry has been able to produce more raw material off fewer animals. This is illustrated by the fact that, although the national flock has been significantly reduced in size, the total tonnage of lamb produced has grown since the early 1990s.

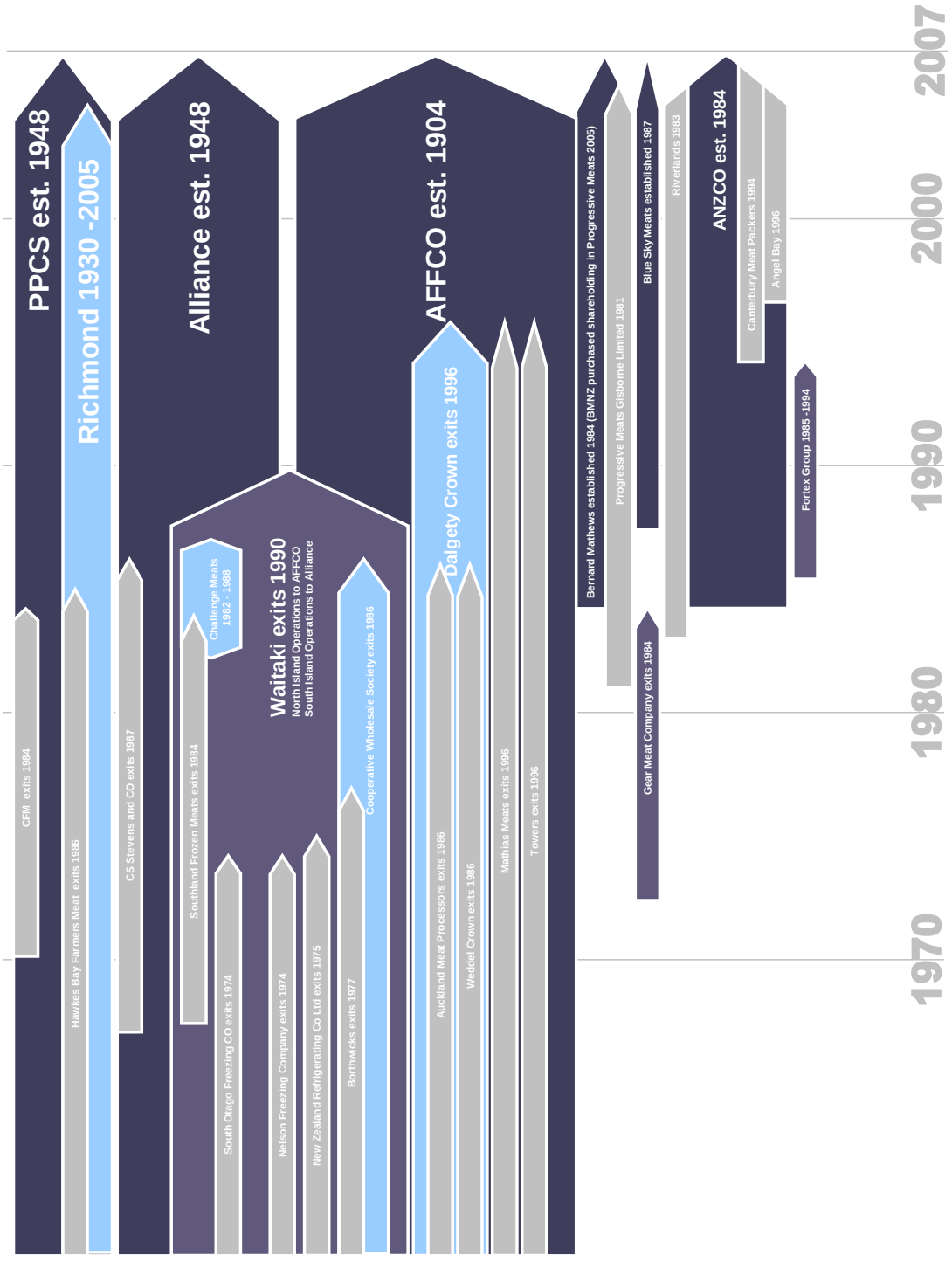
Returns to farmers for livestock have also seen significant growth since the removal of subsidies. Although much more volatile than the growth experienced during the subsidy era, returns for both mutton and lamb have improved since being exposed to international market forces.

Where the returns from sheep have grown since the removal of subsidies, the total number of sheep and beef fell between 1981 and 1990. The decline was occurring prior the removal of subsidies and the most notable decline has been in sheep and beef farms over 60 hectares. Where the number of sheep and beef farms has fallen over this time, the total number for all types of farms has risen with an increase in small holdings and rises in the number of dairy and horticultural farms.

Chapter 6
Processing Industry

6.1 Present organisational structure

Figure 6.1: Meat processing and exporting companies in New Zealand.



Note: the width of the bar does not represent the relative size of the company, but indicates which companies evolved from or took-over other companies.

The New Zealand meat processing industry is presently dominated by two producer co-operatives, a list company, a private investor-owned company and numerous smaller processors and exporters. The largest of the processors is the Primary Producers Co-operative Society (PPCS) who in 2008 were responsible for managing 29 per cent of New Zealand's total sheep meat exports. Figure 6.1 shows the evolution of the current structure of the meat processing and exporting sector.

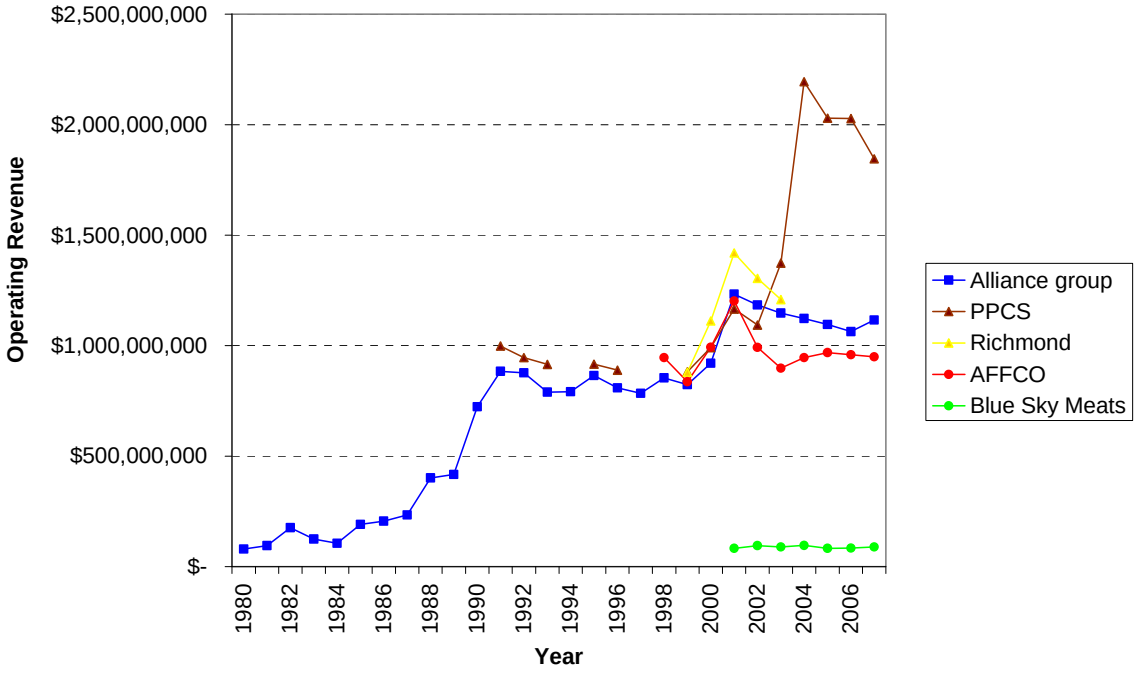
Originally established in 1948, PPCS's early operations were centred on marketing and stock procurement. Having no processing facilities of its own, PPCS would process stock through existing plants under the 'Open Door' provision of the Meat Act (1964). In response to the export market shift into chilled and value added products, PPCS began strategically investing in processing facilities from 1982 onwards with the most significant acquisition being its takeover of Richmond Ltd in 2004. The Co-operative presently operates 26 plants nationally and recently reported an operating deficit before tax of $48 million for the year ending August 2007.

The second of the four major players is AFFCO established in 1904. By the 1970s, AFFCO was operating three processing facilities in the North Island. By 2005, this had grown to 10 plants mostly through the acquisition of Waitaki's North Island processing facilities after the company's collapse in 1990. Originally established as a farmer co-operative, AFFCO became a publicly listed company in 1995 with Farmers still holding the dominant shares in the company. AFFCO exports approximately 150,000 tonnes of beef and lamb products annually and reported a net operating surplus before tax of $1.3 million for the year ending September 2007.

Established in the same year as PPCS, the Invercargill based Alliance Group Limited (Alliance) also operates as a producer co-operative. Alliance moved into processing much earlier than PPCS with the construction of its first plant at Lorneville in 1960. It acquired a further 3 plants when it took over C.S. Stevens' operations in 1987. In 1990, the division of Waitaki's North and South Island operations saw Alliance acquire another six plants. From 10 plants, Alliance has since dropped to 8 facilities through which it processes approximately 27 per cent of the annual sheep meat export. Although Alliance, PPCS and AFFCO manage the dominant share of the New Zealand meat export and manufacturing industry, there has been increasing competition from smaller investor owned firms from the mid 1980s. In the year ending September 2007, Alliance returned a pre-tax surplus of $6.6m.

The ANZCO Group (ANZCO) is a group comprised of several processors and marketing groups situated throughout the country. Established in 1984, ANZCO was set up by the New Zealand Meat Board in an attempt to bring order to the fragmented Japanese commodity market of the time. Later that same year, the Japan New Zealand Lamb Marketing Co Ltd (Janmark) was established as a collaborative effort between the Meat Board and processors C.S. Stevens, Top Trading and Waitaki to establish a market for further processed cuts in Japan. When the Meat Board sold ANZCO in 1993, its initial $350,000 investment had grown into a major player in the industry. This was later strengthened by the merger of Janmark operations into ANZCO in the same year. ANZCO is presently made up of several processing and marketing companies including Canterbury Meat Packers Ltd., Crown Marketing Ltd., Riverlands Ltd., ANZCO Green Island, Five Star Beef Ltd and Angel Bay. Figure 6.2 shows the revenue of some of these processing and exporting companies.

Figure 6.2: Operating revenue for five processing and exporting companies with publically available information.



Operating around the four major players are several smaller operations that predominantly specialize in further processed and value added products. One of the larger fringe companies is Bernard Matthews New Zealand (BMNZ) whose operations centre around the export of value added cuts predominantly to the UK Market. In February 2005, the company acquired shareholdings in Lamb Packers Feilding Limited and Progressive Meats Gisborne Limited on the grounds that the acquisition would a security of supply for the company (Ministry of Agriculture and Forestry, 2005). However, BMNZ has since been bought out by a syndicate including managers of Progressive Meats and Feilding-based Venison Packers Ltd (http://www.country-wide.co.nz/article/6458.html [accessed 27/04/07]). BMNZ operates three plants in the North Island. Of the three, BMNZ's Gisborne plant is the only one set up for both slaughter and further processing while further processing from its Fielding operations is conducted at a specialized plant in Waipukurau.

6.2 Structural changes

6.2.1 Impact of hygiene regulations

New Zealand's meat processing industry has been subject to repeated restructuring due to cycles of poor economic performance, inefficient production and distribution practices. In addition, the first of the single-chain processing plants was constructed during this period. Over each period of reconstruction, the Meat Board has played an active roll in attempting to influence the processing sector in directions that it viewed as being in the best interest of the industry. Forefront in the Board's objectives were to produce better economies of scale within production and distribution chains while promoting a rational, competitive industry that provided a positive trading environment for stock producers (Calder and Tyson, 1999).

As has been previously covered, increasing international pressure in the 1960s and early 1970s saw necessary upgrades in hygiene and inspection practices within New Zealand's

processing industry. By the 1980s the upgrades had seen improvements in food safety and quality assurance but had come at a significant cost to the ongoing profitability of the industry as a whole. It must be noted though that without the upgrades, market access would have been severely reduced. In addition to the capital expenditure needed to upgrade New Zealand's ageing infrastructure, the increased labour required to meet the new hygiene standards only served to compound compliance costs.

Although initial projections by the Meat Board had put the cost of the upgrades at $90 million for the entire industry, by 1981 the Freezing Companies Association (FCA) reported that the upgrades had cost the industry over $382 million through meeting compliance costs with a further $268 million being spent in capital development. Even with the work that was achieved during the period, by 1983 only 34 companies met 3CVD requirements and were eligible to export to the EC (Calder and Tyson, 1999).

The cost of upgrading resulted in plant closures such as the 1973 closure of Wellington Meat Export Co's Ngauranga plant. In the same year, the Co-operative Wholesale Society proposed the sale of its Longburn works to the New Zealand Meat Board in return for access to lamb processed through the plant. Although the Board showed interest in the proposal, negotiations eventually fell through.

In 1972, the increasing costs associated with the upgrades resulted in Canterbury Frozen Meats (CFM) putting forward a proposal to merge the South Island's processing industry into one company. The proposal suggested that consolidating operations on the South Island would evenly spread the cost of plant upgrades across companies, bring a rationalisation to stock procurement and handling and provide for more efficient processing and marketing (Calder and Tyson, 1999). Initial talks looked promising but discussions failed as companies pulled out of negotiations. Although the proposal was unsuccessful, that fact that discussions proceeded as far as they did was evident that there were industry moves to rationalise at least the South Island operations at this time. Although this proposal may have gone some way to improving the efficiency of procurement, distribution and marketing operations of the sector, New Zealand's ageing processing infrastructure was the dominant factor in the overall efficiency of the industry.

6.2.2 Changes from the de-licensing of the industry

By 1981, 23 of the operational meat processing plants in New Zealand had been originally constructed prior to 1912 (Robinson, 2006) with only three new plants being constructed between 1922 and 1972 (Calder and Tyson, 1999). This can be credited in part to the heavily restrictive application process for new plant development governed by the Meat Act 1964. Under Section 28 of the Act, companies that wanted to develop new works had to provide evidence that there was an economic justification for the new plant and that it would not adversely affect the viability of any existing plants in the immediate area.

Due to these restrictions on development, the act had a provision designed to insure that companies without processing facilities could get access to them to have their stock killed through existing plants. Covered in Section 34 of the Meat Act, the 'Open Door' policy gave producers and producer co-operatives the flexibility of where they could have their stock processed. In the late 1970s, access to killing space through this provision was becoming increasingly difficult as rising stock numbers and existing contracts meant that available killing space within established plants was becoming limited. The provision could also be regarded as anti-innovative as it meant that companies forfeited some degree of control over how the kill was processed and marketed.

The latter provision created problems for the new market driven companies that were emerging during the late seventies. As covered previously, the dominant view of the industry at the time was that further processing was not cost effective and was generally reserved as a salvage measure rather than value adding practice. Few of the existing works had the facility to conduct complex value added processing. This raised problems for market driven companies like Fort Export who began having difficulties filling orders for value added cuts due to the inflexibility of the companies that they were contracting through. Rumours also began to circulate that the processing companies were substituting the smaller players stock with their own, poorer quality stock to fill orders (Martin, 2004). This situation was to change significantly through the amendments to the Meat Act in 1981 that removed many of the restrictions on developing new processing.

The most significant of the 1981 amendments to the Act was the removal of the need to provide economic justification for the development of new processing facilities. Although industry changes were not immediate, the changes to the Act resulted in more technologically advanced and capital efficient processing plants being developed throughout the country during the 1980s.

The flagship for this new style of plant was Fort Export's Seafield operations based out of Ashburton. Opened in November 1982, the plant was designed as a deer slaughter facility for Canterbury's developing venison industry. In addition to its venison operations, Seafield was initially developed with further processing facilities attached to the plant that allowed the production and packaging of value added lamb cuts. Packaging and processing technologies were used throughout the plant providing the potential to further process 100 per cent of the plant's throughput. The site was further developed in 1987 to include a single chain slaughter board dedicated to lamb, sheep and goat processing. In addition to increasing the slaughtering capacity of the plant, chilling space was expanded in an attempt to tap into the increasing growth in value of chilled exports. Although the open use of technology created significant gains for the plant in terms of processing efficiency, the following section will show that it was later developments in the staffing of the Seafield plant that resulted in significant gains in processing efficiency.

6.3 Labour

By the late 1970s, the increase in production levels as a result of agricultural subsidies were also causing increased stress for the workers of the underdeveloped processing facilities of the time. In addition to this, the uncertainty of employment due to the introduction of technologies that reduced staffing numbers, and the closure of plants as part of the over arching rationalisation of the industry, began to result in strike action by the heavily unionised workforce.

It has been argued that a pattern emerged where the threat of industrial action was timed to coincide with the start of the killing season (so as to be the most disruptive) (Martin, 2004; Robinson, 2006). Processors had little option but to submit to union demands or lose out on significant contracts and the consequent share of the stock available for processing (Martin, 2004). Nationally, working days lost through industrial action within the processing industry exceeded all other industries for the time (Robinson, 2006). Between the 1976/77 and 1979/80 killing seasons, just under 15,000 working days were lost through industrial action (Robinson, 2006). This situation was to change significantly over the following 20 years though the introduction of shift work and changes in legislation governing employment relations.

It was not until the late 1980s that significant progress was made in introducing shift work into the industry. The catalyst for this came out of arrangements made between the Fortex group and its staff at the Seafield plant. The operating philosophy of the company saw shift work as imperative to increase the productivity of the single chain operation. Shift work was already operating on the plants further processing facilities but, after six months of negotiations with the union, Fortex had not been able to extend the deal to the new lamb slaughtering facility (Martin, 2004).

In November 1987, Fortex decided to begin shift work on the slaughter board on the assumption that the deal brokered for the cutting operations would eventually be extended. The decision drew strong criticism from the unions resulting in a 200 member strong picket of the plant. Fortex's action also resulted in the union taking the company to the labour court for illegal work practices. The court found in favour of the unions and gave both parties a month to come back with a workable solution for the plant.

The outcome fell in favour of shift work with the unions agreeing to extend the existing agreement out to the slaughter board albeit with some significant changes. The final agreement on the shift arrangement saw four day's work being compressed into three 11 hour days. In return, workers would be given five day's pay, guaranteed work per week as well as guaranteed holidays, medical cover and superannuation.

Further changes in the industry were to come as a result of the introduction of the Employment Contracts Act 1991 (ECA). The new environment of individual contracts and freedom of association broke down the traditional influence of the Unions and allowed for greater flexibility in working practice. Although some industrial action still persisted, it was on a far lower scale than had been experienced previously. Being able to establish working agreements on a plant by plant basis also allowed the industry to increase the efficiency of work practices as a result of the changing productivity levels that were occurring as a result of new processing facilities and shift work.

6.4 Processing efficiency

Freezing works at the turn of the 20th Century used solo butchers processing approximately 100 lambs or 90 sheep a day. However, industrial disputes in the early 1930s led companies to rethink their dependency on skilled labour. This saw the introduction of the chain system, or 'disassembly line', which involved moving the suspended carcass along a rail and having several semi-skilled butchers doing individual parts of the processing. By 1936, most facilities had introduced chain systems for sheep meat with USA influences in the 1960s seeing the system being adapted for beef processing.

With the increase in stock numbers in the 1980s plants had to add additional chains and storage to manage the increased kill. However, the removal of Government support to pastoral agriculture by 1985 saw a steady downturn in the stock available for slaughter with the result being that the larger plants were increasingly operating below their potential capacity. Running in parallel to this, the changes to the Meat Act in 1981 had seen an increase in new players to the market that were acquiring stock from the traditional catchments of the more established companies.

The resulting drop in available stock was beginning to impact on the profitability of the more established companies. The high fixed cost nature of the multiple chain operations meant that the plants were only profitable when operating near their full capacity. The problem for the larger works then became how to bring the chains up to full capacity as quickly as possible

and then maintain the maximum throughput across the season. Such processing plants are well suited to regions where the supply of lambs is highly seasonal, such as Southland. There are also some cost savings relative to multiple-shift plants, such as the need for only one vet, MAF inspector, supervisor and engineer.

In contrast, the newer breed of single chain plant showed an efficient use of capital through operating at full capacity for a larger percentage of the season by adding or removing shifts to cope with variations in throughput. Single chain operations also had a distinct cost advantage over multiple chain plants with respect to integrating labour saving technologies into their operations. Using a three chained single shift plant as an example, the company operating the plant would have to invest three times as much in integrating automating technology into the chains to see the same efficiency gains that could be achieved by adding the one machine to a single chain plant operating three shifts. In addition to the changes in the processing sector, changes behind the farm gate were also seeing increasing efficiencies in processing.

Changing breeding practices on the farm were beginning to produce heavier, leaner stock. The result for the processing and export industry was that greater volumes of lamb meat could be generated from less stock. Larger carcases were also easier to handle and processes resulted in reduced labour cost per unit on the slaughter board floor. These on-farm changes, in conjunction with the introduction of shift work and the adoption of labour saving technologies along the processing chain have seen dramatic increases in the efficiency of the processing sector as illustrated by Table 6.1. These changes have all been in response to market signals and in order to survive.

Table 6.1: Changes in the processing efficiency for an average lamb chain 1986 – 2003

	1986	**2003**	**% gain**
Lambs/day	3200	4000	+25%
Staff	58	27	-54%
Lamb per person/day	55	148	+169%

Source: (Oram 2005; Poole *pers comm.*, 2008)

However, while these factors have improved efficiency on a per person per day basis, the industry as a whole is still operating under capacity due in part to the seasonal nature of stock availability. Looking at Table 6.2, it is possible to see that for the 2005/06 season the average weekly operating throughput was only 41 per cent of the maximum weekly throughput for the season. It is this seasonal nature of the raw material and resulting competition between companies to procure stock that was to have a significant impact on the industry in the early 1990s.

Table 6.2: Summary of export sheep processing throughput

* Lamb equivalents, Sheep = 1.15 lambs.

	1996-97	**2003-04**	**2005-06**
No. Of Companies	18	23	21
No. of Plants	37	39	39
Year Kill (000s*)	30,738	27,482	28,923
Max Week (000s*)	1,569	1,417	1,361
Av per Week (000s*)	591	528	556
Av as % max	38%	37%	41%
No. Weeks at max to kill all lambs available	19.6	19.4	21.2

Source: (Davidson, 2006)

6.5 Material supply

An extreme example of the impact that competition over stock to maximise throughput can be seen in the early 1990s with the introduction of new players to the industry that was facing a decline in raw material. In this type of environment, the larger companies began to battle to protect their share of the national kill while leaving the new companies to fight for access to what was a decreasing resource. Competition was particularly strong at the start and end of the seasons where the volume of stock ready for slaughter was low. Although better placed to cope in these shoulder periods from a fixed cost perspective, the competitiveness of single chain operators was reduced due to increased procurement prices as a result of competition between the larger companies during these times.

The situation came to a head in the 1989/90 and 1990/91 seasons with the start of the 'procurement wars'. By the end of the 1989/90 season, 12 new plants had started up in the three seasons prior (Calder and Tyson, 1999) and the national sheep flock had dropped by over 10,000,000 since its peak in 1982. At the farm gate, confidence in the processing industry was waning with farmers switching allegiances or spreading stock over multiple companies as an attempt to minimise risk. Many farmers lost money when companies failed while holding their lambs and subsequently did not pay their creditors (including the farmers). At the same time, farmers were making the most of this increased competition by playing competing companies up against each other to receive the best price that they could for their animals.

The transport industry also saw the benefits of competition through having to transport stock procured by companies from outside traditional catchments. With the downturn in stock available, and the increase in companies vying for shares in the local catchments, companies began looking nationally both to source additional stock and to take advantage of variation in the length of lambing seasons in different parts of the country. In some cases, South Island companies were even offering freight free agreements to acquire stock from the North Island (Calder and Tyson, 1999).

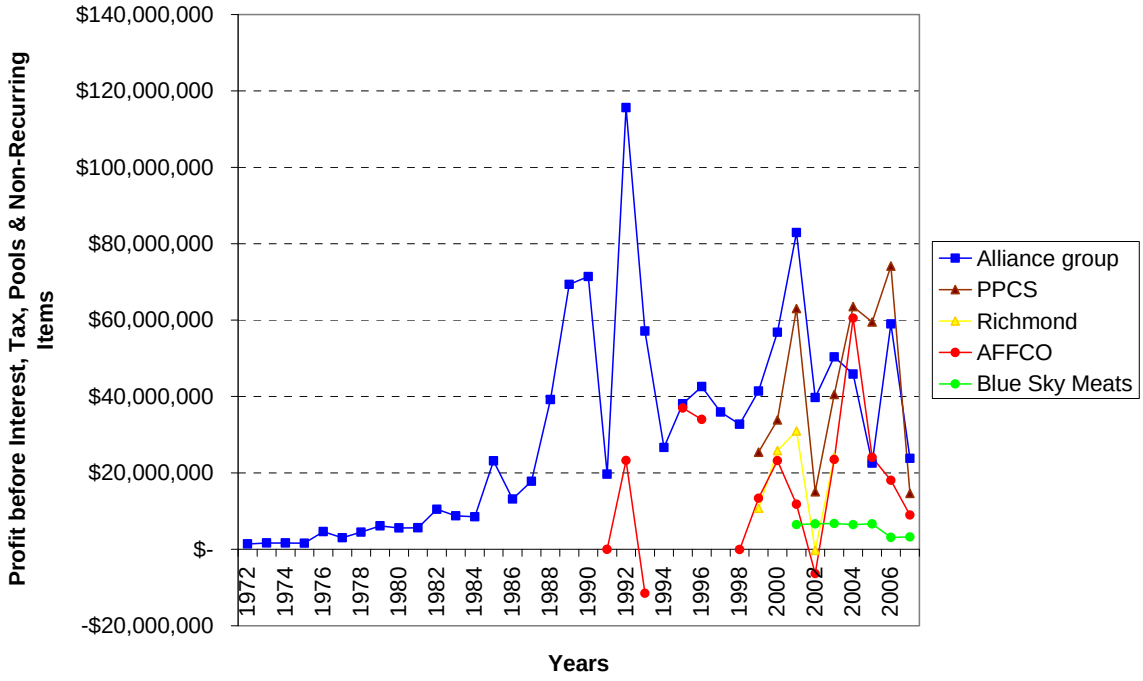
This increased competition had come at a cost both to the immediate and long-term development of the industry. The competition to determine the last man standing had lead to companies cutting in to financial reserves. Money spent on acquiring stock had also cut in to other areas that could insure the long-term sustainability of the industry such as product and market development, training and investment. For some, the high levels of procurement costs, had seen banks and shareholders beginning to question their investments in the industry (Atkinson, 2006)

6.6 Processor profitability

Similarly, meat processor returns have continued at relatively low levels. Profit level for processing companies appears to be highly variable between years and between companies (see Figure 6.3). During years of intense competition for lambs (and cattle), profits are low because of the need to pay procurement premiums. Processors also attempt to somewhat buffer farmers from the full extent of low market prices resulting from an unfavourable exchange rate.

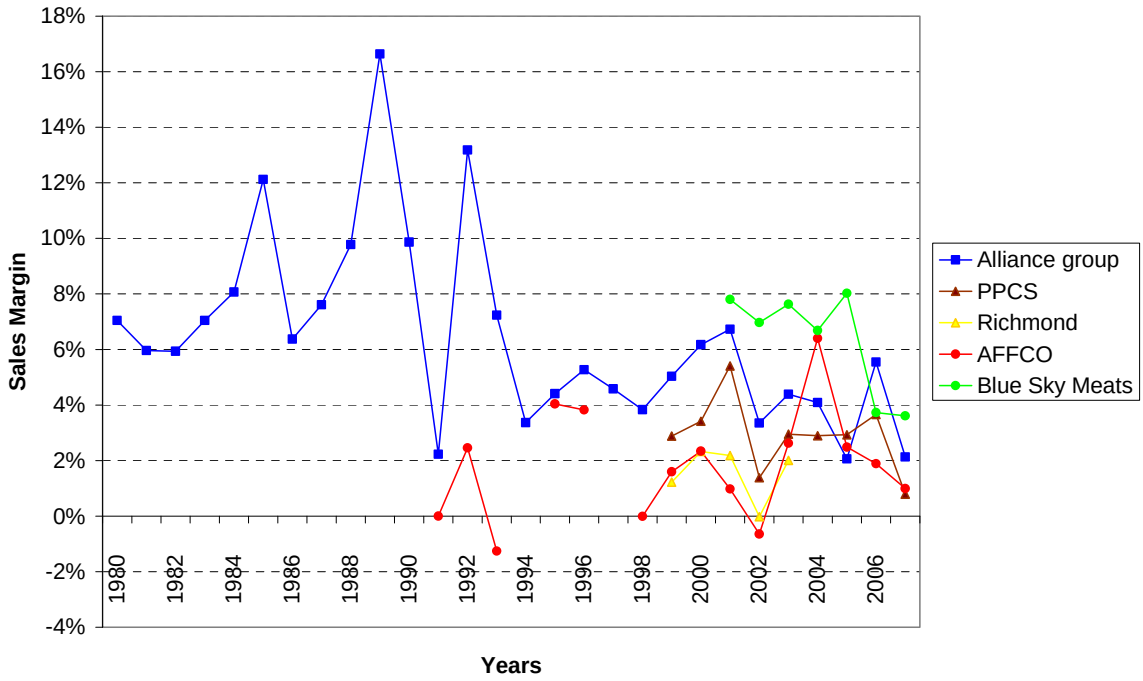
It is important to note also that most of the companies discussed below also process and export beef, some companies to a greater extent than others. Therefore, the profitability of beef processing and marketing will be affecting the results presented below.

Figure 6.3: Profit before interest, tax, pools & non-recurring items for five meat processors with publicly available information



The margin of profit before interest, tax, pools and non-recurring items over operating revenue is typically low for the meat processing companies. Recently, this has ranged between zero and eight percent for those companies with published financial results (see Figure 6.4).

Figure 6.4: Sales margin for five processing companies with publicly available information



Since 1990, processing companies with publicly available information have typically earned approximately 10 per cent return on assets (Figure 6.5). Return on equity is also typically approximately 10 per cent, suggesting that profit before interest and tax (PBIT) margins of processors are too low to capitalise on the high gearing common across the industry (see Figure 6.6). Asset turnover ratio is typically 3-4 times.

Figure 6.5: Return on assets for five processing companies with publicly available information

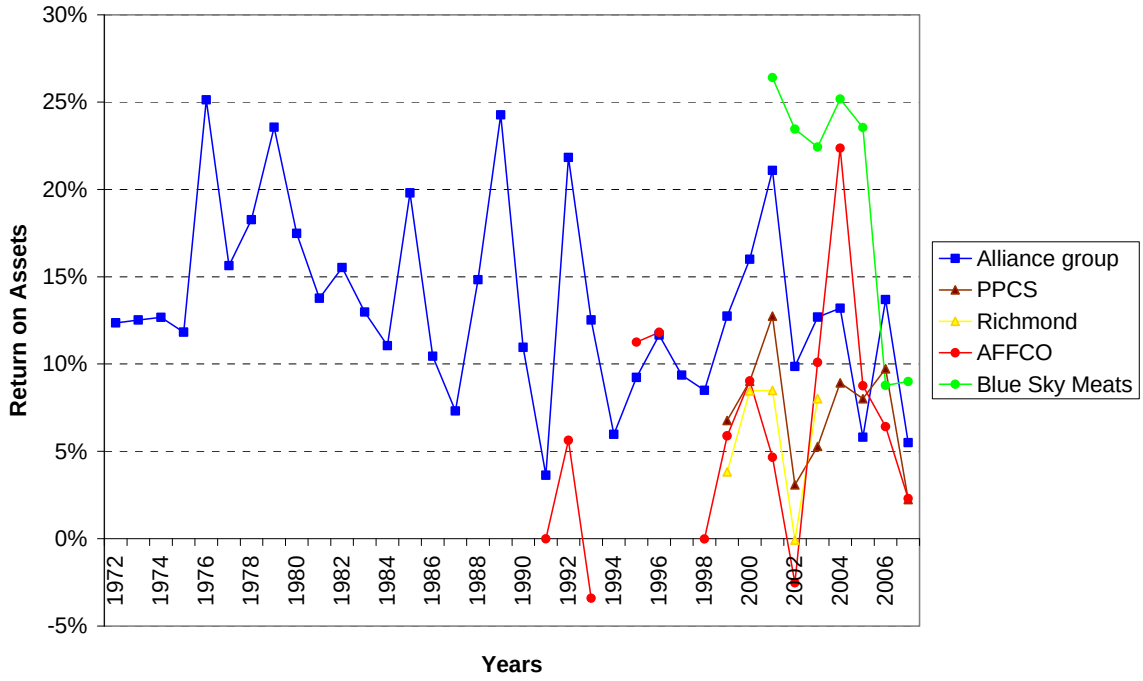
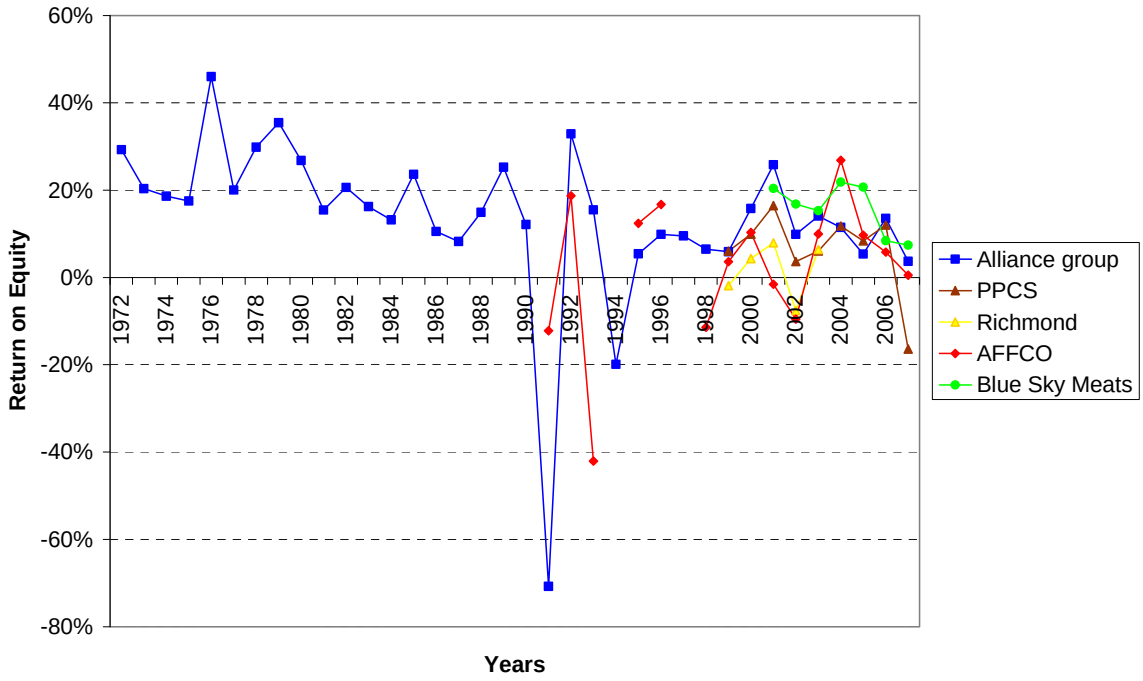


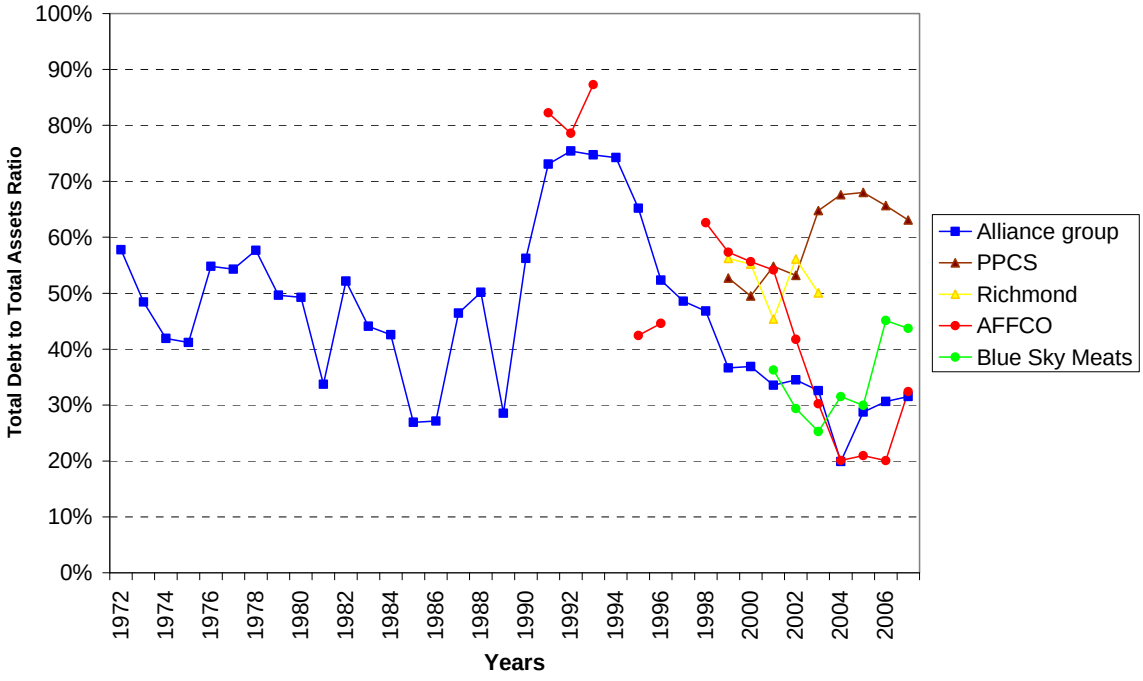
Figure 6.6: Return on equity for five processing companies with publicly available information



6.7 Processor indebtedness

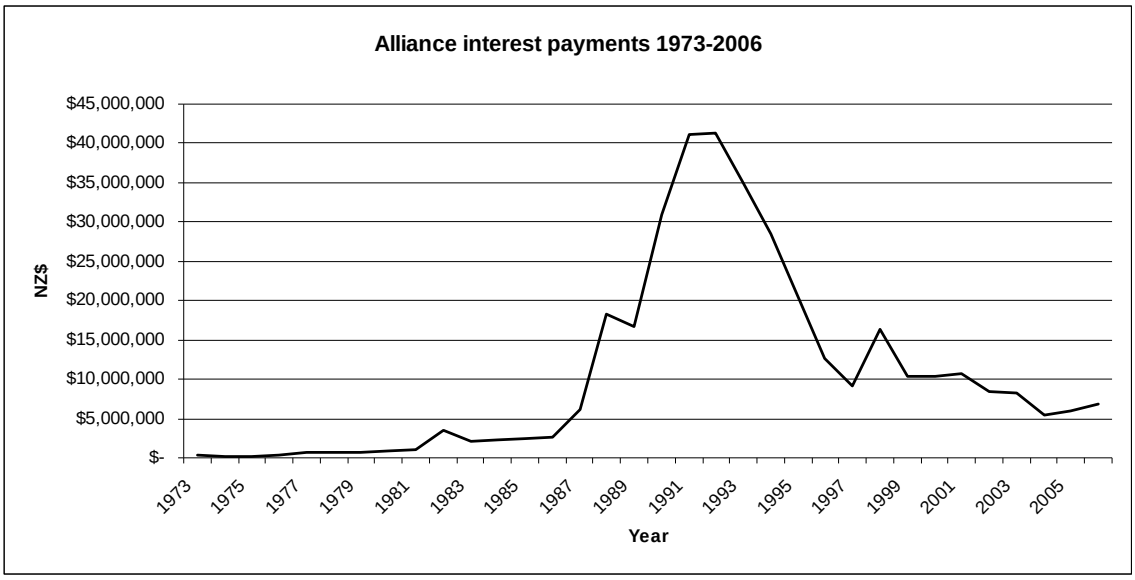
The debt level of meat processing companies has historically been relatively high, particularly relative to their debt servicing abilities. Southpac (1994) estimated the aggregate debt:asset ratio for the New Zealand meat industry was between 70-75 per cent in 1994, up from 55 per cent in 1989. Recently, most of the major processing companies have focused on reducing debt in an attempt to mitigate financial risk, recognising that high debt levels were one of the key drivers of low profitability within the sector. However, in 2006 some individual companies are still carrying a level of total debt similar to the levels of the early-mid 1990s (see Figure 6.7). A high level of debt also contributes to the inability of companies to bear the cost of reducing excess capacity.

Figure 6.7: Debt to total asset ratio for five processing companies with publicly available information



By primarily borrowing to finance procurement in the late 1980s and early 1990s, debt to equity levels eroded shareholder value and reduced interest cover so that at times companies were barely able to service their debts. EU hygiene regulations and capital expenditure resulted in much larger interest payments for processing companies. Below is an indication of the extent of these increases for Alliance who paid almost seven times more interest in 1992 than in 1987 (see Figure 6.8).

Figure 6.8: Alliance interest payments 1973-2006

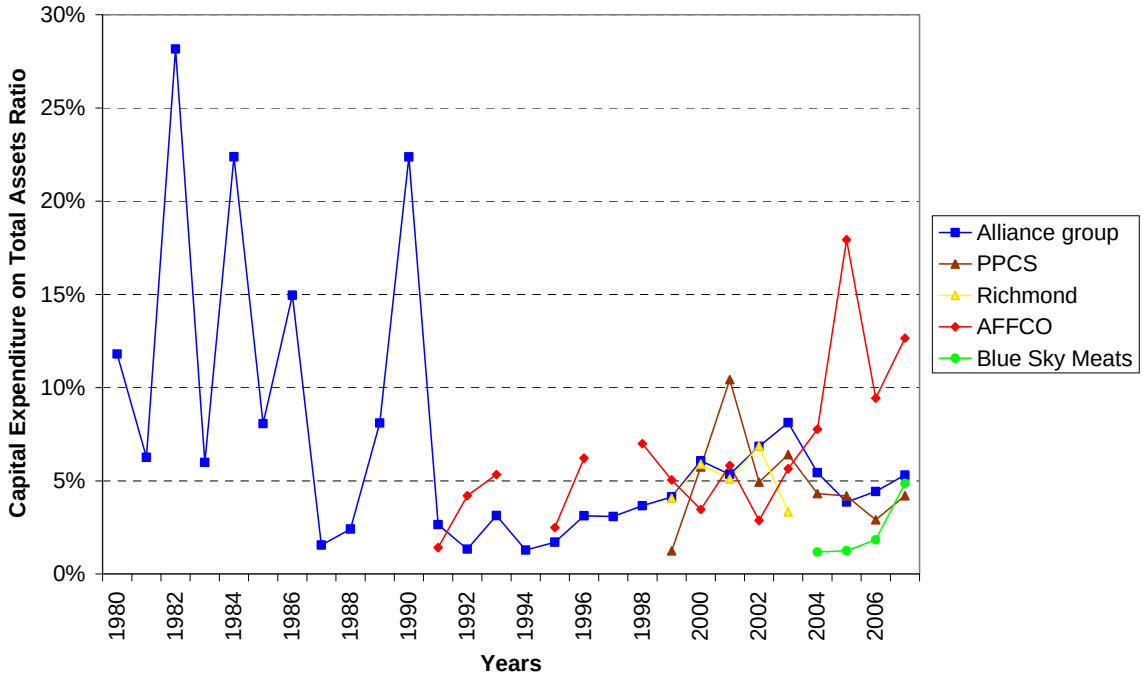


Source: Alliance Annual reports

6.8 Investment and capital expenditure in the processing sector

Capital expenditure has been relatively low since the early 1990s, but has been gradually increasing as many companies have been progressively upgrading their processing plants to improve efficiency and meet rising hygiene standards (see Figure 6.9). There are no publicly available measures of investment in market development or product innovation. However, the market mix described in Chapter 7 shows little diversification which suggests that this level of investment has also been relatively low. This is to be expected given the low level of profitability within the sector.

Figure 6.9: Capital expenditure per total assets ratio for five processing companies with publicly available information



6.9 Summary

New Zealand's lamb (and beef) processing and export sector is presently dominated by AFFCO, PPCS, Alliance and ANZCO. The first three were initially established as farmer co-operatives and together are currently responsible for processing and exporting the bulk of the national kill.

The industry as a whole has been subject to repeated restructuring over the past 30 years. In the 1970s for example, the cost of the necessary upgrades to meet USA and EU hygiene requirements resulted in plant closures and industry led attempts to rationalise operations on the South Island.

The de-licensing of the industry in the early 1980s saw further changes to the industry structure as newer players entered the processing and marketing sectors. Changes in the legislation also allowed for the development of newer, more efficient and technologically advanced plants. Although the introduction of new plants went some way to addressing the inefficiencies of the industry it was later developments in labour relations that enabled efficiency gains to be achieved.

Shift work for the slaughter board was first introduced in 1987 at Fortex's Seafield plant following lengthy consultation with the Unions. The deal resulted in a more efficient use of capital when compared to multiple chain, single shift operations as the company could increase the throughput of their operations without having to invest in additional capital. However, the added operating costs extracted by the union from Fortex probably contributed to its demise.

Where the introduction of shift work dramatically improved capital investment, technological advances on the farm and on the processing floor saw increased efficiencies in processing on a per person/per day basis. However, the industry is still operating below full capacity for a significant proportion of the season due to the seasonal nature of raw material supply and increased competition over less available stock.

Chapter 7
The Sheep Meat Market

7.1 Change in customers/consumer demand

In 1980, approximately 85 per cent of the exported lamb volume was in carcass form with the other 15 per cent sold as cuts. By 1990, cuts and boneless product sales had exceeded 50 per cent by volume. In 2006, only 3.9 per cent of lamb was sold in carcass form with 81.5 per cent sold as primal or sub-primal cuts and a further 14.6 per cent in bone-out and boneless form. This is quite a remarkable response to market requirements and reflects a genuine paradigm shift within the processing and exporting industry. Japan and Continental Europe were of the first markets to start the demand for cuts. A related shift towards chilled rather than frozen product has also occurred, although this shift did not gain much momentum across the industry until the mid-1990s. Typically, only premium cuts of meat are supplied chilled, with 15 per cent of lamb export volume being chilled in 2006.

Over this time, the customers for New Zealand lamb have largely changed from meat wholesalers and butchers to supermarkets. This is especially the case in the UK, which continues to be a very significant destination for New Zealand lamb. As the dominant marketing channel for lamb in the UK shifted away from high street butchers towards supermarkets, there was an associated need to supply lamb cuts. This was because the retailers did not typically have the resources or facilities to produce cuts of meat; and did not necessarily want to buy all cuts. This caused a significant shift in the location of costs along the value chain back towards New Zealand. When lamb had been sold to butchers who preferred to cut their own meat to a range of customer specifications, further processing costs were covered by the butchers. Indeed, their profitability was determined by their skill in utilising the entire carcass during their "free" time behind the shop counter. The supermarkets have been able to out-compete the butchers on volume and margin, and by using their much greater buying power. Much of the early development of sub-primal cuts was in markets other than the UK. The UK was slower than other markets because of the existing infrastructure associated with the wholesaler and butcher.

Over this same period since 1980, there has been a change in consumer demographics. There has been an increase in the number of families with two working adults, which increased the demand for convenience in meat products and encouraged growth in cut sales. Smaller families also required meat in smaller parcels. This reduction in parcel size has also contributed to the increase in unit costs for processors/exporters. At the same time, consumers have become increasingly demanding with respect to consistency and reliability, have greater concerns about the healthiness and safety of the food they eat, and about the welfare of the animals they eat. Consumers have become more sophisticated, and this has been one of the incentives behind the change in the products that sheep meat processors/exporters supply today.

Some consumers prefer to purchase unfrozen meat, often because it is more convenient avoiding the need to thaw the meat before cooking, or because of their belief that it *is* fresh. Supermarkets did not have the skills to deal with cutting carcasses and they lacked the infrastructure to thaw meat in a controlled and safe manner. Consumers in Japan and the USA traditionally prefer fresh lamb cuts (and increasingly in the European Union), so were key markets in encouraging the expansion of chilled lamb cut production. Similarly, the hotel, restaurant and institution sector only seek cuts of lamb.

The Japanese market was developed around relationships established in the marketplace, and was the foundation market for finished lamb products. There was no internal market or production of lamb in Japan, hence, no inherent demand for lamb meat. They had a meat eating tradition of eating thin and small slices of meat but not a tradition of eating lamb meat. Lamb meat would be eaten on a rare occasion or was a short-term fad. Sheep meat was seen as a source of protein and often sold as sausage meat blend. Japanese butchers deodorised mutton using water. ANZCO started exporting to Japan, the 'right' cut, small pieces of meat with the fat removed, consistent with consumer demand, and the rest of the industry followed. Finished products started to be exported to other markets as well, as expanded below, and then lamb became a 'white tablecloth food', destined for high-end restaurants.

Different markets prefer quite different styles of cooking based on ethnicity, tradition, cooking techniques and wealth. When whole carcasses were traded, the entire carcass went to one market and the butchers or wholesalers worked out how to market the various components of the carcass. With the introduction of further processed products and cuts, the opportunity arose for customers to not purchase the entire carcass and the resultant cuts. Similarly, the opportunity arose for exporters to target specific cuts to specific markets. For example, legs were largely directed into the UK and EU markets; racks were the dominant cut exported to the USA while one of the key markets for shoulders (boned, rolled and tubed), was Japan. This targeting of destinations allowed the exporters to maximise the revenue for each carcass.

Initially, New Zealand only exported leg, shoulders and chops to the UK, but up to 10 different cuts to Germany. This was because there was a long history and tradition of supplying carcasses and then 'traditional' cuts to the UK, while lamb was a relatively new product for German consumers so exporters could determine how it was presented. The US market is similar to the German situation because of the lack of history of eating lamb. The meat buyers in the UK thought that there would not be a demand for more cuts in that market. A trial was initiated to test the demand of more cuts in the UK market through on the UK's main supermarket chains and there was a significant and positive response. Hence, the meat buyer had been acting as a 'gate keeper', had misunderstood his customers' changing preferences, and had made incorrect decisions on behalf of the consumers.

One of the most important developments in product specification has been around quality assurance and management. There have been two main points of interest: processing hygiene, and on-farm and transport quality assurance. All processing companies have chosen to, or been required to embrace these schemes to retain or expand their customer base. Some companies have established supply clubs aligned to specific customers, membership requirements for which include detailed quality assurance and auditing as part of the overall partnership.

7.2 Markets

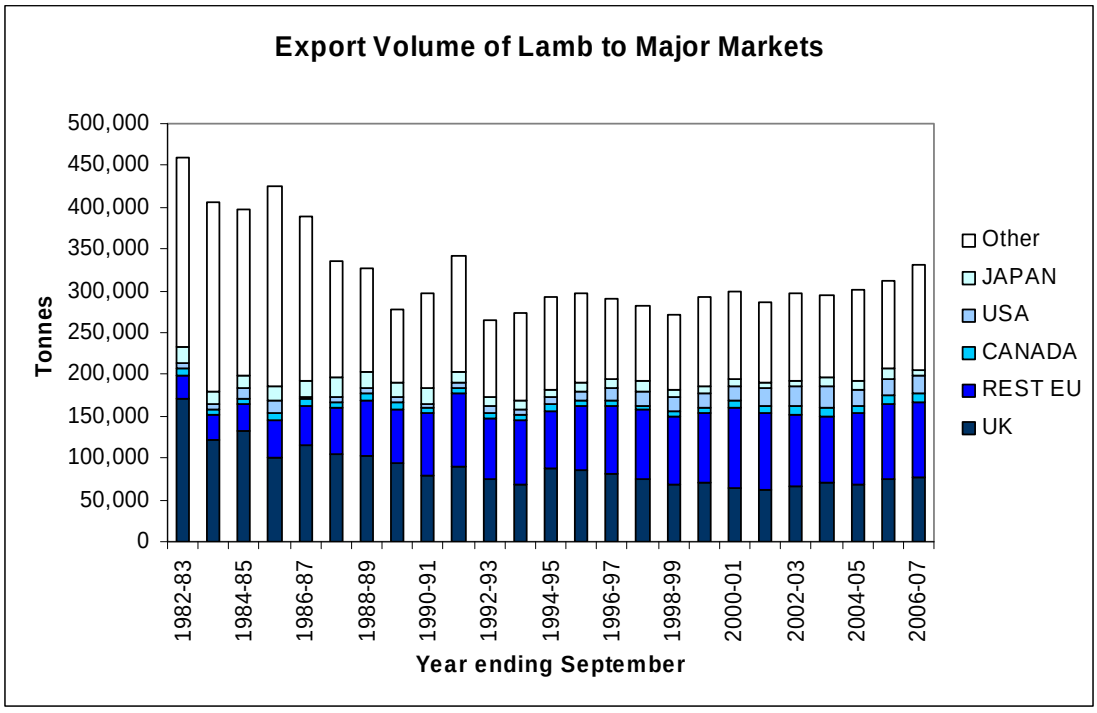
There was some suggestion that markets for New Zealand lamb have become increasingly diversified since 1980. However, the data presented in Figure 7.1 below does not appear to entirely support this suggestion. In fact, ninety percent of today's further processed markets were developed during the early-mid 1980s.

Certainly, the proportion of lamb sold to UK customers has declined because of the strong focus on marketing and market diversification when the UK joined the EU. Part of the volume that had previously been sold to the UK was gradually diverted into other European markets; and a New Zealand lamb marketing company was established in the US to assist in

this market development. Thus, the volume of lamb sold to the EU has remained fairly stable, but the relative importance of this market grew significantly from the mid-late 1980s due to the reduction in sheep numbers, and has only slowly declined since around 1992-93. The US market has grown while the Japanese market has shrunk since 1982-83.

The relative stability of the volume sold to Europe is due to the tariff-free export quota that New Zealand holds.

Figure 7.1: Export value of lamb meat to major markets



Several informants felt that the quality of lamb products offered in New Zealand was often inadequate. The introduction of the Quality Mark had seen this improve and this was important because tourists eating lamb in New Zealand, is often their first such experience. If it is a good experience, then they may seek to enjoy that same experience when they return to their home country.

7.3 Costs to processors of meeting customer requirements

Further processing adds considerably to the degree of difficulty associated with processing the carcass, and has added to unit costs. Supplying chilled product has similarly increased cost. There was some suggestion that New Zealand lamb processors and exporters have not been fully recompensed for this large increase in costs. However, it is very difficult to empirically support, or refute this position because of the confidential nature of the data required. Price spreads in the UK were largely unchanged, although seasonally variable, from 1980 to 1990 (Tiffen and Dawson, 2000), but started to gradually increase from 1990 onwards (London Economics, 2003). There is no data to suggest whether retailers, or processors were increasing their relative share of the final price. Alliance Group's profit margin for the period 1980/1994 averaged about 7 per cent on revenue. It was also highly variable during this period (2-17 per cent). However, for the period 1995/2006, Alliance Group's profit margin averaged about 4.5 per cent (see Figure 11.9). Southpac (1994) reported the aggregate return

on net assets after extraordinaries for the New Zealand meat processing industry was -8.75 per cent for the six years 1989/1994, a period during which lamb numbers declined markedly, intensifying competition for lambs. This would suggest processors were not receiving sufficiently high enough market prices, or were competing away their margins through cutthroat competition for livestock as individual companies attempt to operate at close to full capacity.

Chapter 8
Operating Environment

The New Zealand sheep meat industry operates in an environment that is characterised by the ability to produce pasture to feed livestock all year round, albeit seasonally. However, ewes do not lamb all year round – lambs are born in the spring period from July to October. There have also been a large number of interventions during both the study period 1980-2007 and prior to it. These interventions have come from Government, which now has much less involvement; and various sector bodies such as the New Zealand Meat Board, which have often been very active players within the industry. Each of these aspects are discussed in more detail below.

8.1 Comparative advantages and constraints

The New Zealand sheep meat industry is blessed with the ability to produce pasture to feed and grow lambs relatively cheaply and naturally. The relatively benign climate means that production levels are fairly similar between years, although changes in land use are putting pressure on sheep resources. This same comparative advantage is also the Achilles' heel of the industry – the seasonal nature of pasture production and sheep reproduction translates into a seasonal supply of lambs for slaughter, necessitating substantial overcapacity in the processing sector. Seasonal supply is one of the key sources of tension within the industry, ensuring a continual power struggle between producers and processors in the attempt to balance lamb supply and demand. This challenge is increasing as the volume of chilled product expands, because chilled product is typically supplied on an all-year basis.

Another favourable aspect of fortune is New Zealand's historical link with the UK, which has ensured our continued access to the EU market for lamb meat. It is also fortunate that the EU allows New Zealand to manage this quota on its own. This is a most unusual situation for the management of quota. Geographic location was originally a comparative disadvantage for New Zealand exporters seeking to ship lamb to Europe, resulting in the development of refrigerated shipping. However, the five to six week travel time by sea for fresh/chilled product significantly added to the quality of the meat upon arrival in Europe because of the aging process. Further, New Zealand's remoteness has allowed it to remain disease-free, a significant advantage in marketing lamb, especially during disease outbreaks in importing or competing countries. The high standard of hygiene in New Zealand's processing plants has also been crucial to being able to continue supplying chilled product

One external element exerts considerable influence on market prices, and hence farm-gate prices. New Zealand experiences considerable volatility in the strength of its currency, and because the vast majority of lamb meat is exported, this volatility is reflected in prices paid to farmers.

8.2 'External participants' and interventions

The New Zealand sheep meat industry has experienced many interventions; up to the mid-1980s government and New Zealand Meat Producers Board interventions and in the Board again in the early 1990s. Some of these interventions have occurred at the industry level such as licensing of meat processing, the introduction of SMPs and their subsequent removal,

compulsory marketing by the New Zealand Meat Producers Board, and lamb quota for the EU. Others were directed towards individual or groups of companies such as the investment in numerous processing and exporting companies by the New Zealand Meat Producers Board, via their investment arm, Freesia, the corporatisation of several companies, planned rationalisations such as that carried out by Trial Run Holdings, and refinancing by banks or through public listings.

Many of these interventions were introduced and managed by political bodies including the New Zealand Government and the New Zealand Meat Producers Board. Others were designed and carried out by a small number of managers of companies who dominated the industry, though often with the support of the New Zealand Meat Producers Board. The frequency of these interventions has ensured that it has been difficult for individual companies and producers to invest with certainty. Vested interests have dominated the "rules of the game", and weak companies have continued to operate albeit often with new names or ownership structures. These numerous interventions have resulted in distorted incentives being capitalised into asset values, while the removal of many of these same interventions have resulted in some large collapses and losses of wealth and jobs.

Since the removal of SMPs and other subsidies, the New Zealand Government has had a very limited role in overseeing the sheep meat industry. Similarly, the New Zealand Meat Board has held a less influential or intervening position within the industry since the mid-1990s. The New Zealand Meat Producers Board and affiliated organisations are discussed in more detail in Chapter 9. The New Zealand Meat Board manages the EU quota on behalf of the New Zealand Government, and the associated organisation, Meat and Wool New Zealand, funded by producer levies to provide market intelligence and international policy advice, as well as funds some on-farm research. The quota management system is the last industry-wide intervention. The other more recent interventions have been at the company level with rights issues and other equity placements, and refinancing with bank and bond debt. These have all been in response to the need to dramatically reduce debt, or provide much needed capital to fund upgrades of processing facilities.

8.3 New Zealand Government

Prior to 1984, the New Zealand Government tried to insulate the pastoral industries, and in particular the meat industry, from external shocks and took over all market risks. The purpose was to diversify the markets and products associated with the meat industry, and to protect the industry as a whole. Farmers were completely insulated from market conditions and were incentivised to increase the number of sheep carried. This situation required the processing sector to expand capacity to meet the highly seasonal demand for killing space. In the early 1980s, 40 per cent of the average sheep and beef farmer's income came from subsidies, ensuring market distortion.

The removal of SMPs in 1985 was implemented extremely quickly, largely because of the fiscal situation the incoming government found itself. Approximately 30 different subsidies were removed, including the Livestock Incentive Scheme and fertilizer subsidies. This did not allow farmers much time for adjustment to the new environment so poorly performing farmers and those with high debt levels were forced to sell their farms. The SMPs and other Muldoon-era interventions encouraged a lot of "false growth" in the sheep industry. There was a view held by many in the industry at that time that it needed to focus more on profitability and less on growth. This is still the situation if the sheep industry is to prosper.

Following the removal of the subsidies, the meat industry became more market driven and was exposed to market price signals. Farmers and processing companies had to manage all their risks. The natural response to this increased exposure to risk was to perform at a higher level and to be more careful. Farmers who survived the subsidy removal certainly responded by adopting new technologies and raising their productivity. This is discussed in more detail in Chapter 10.

The New Zealand Government played a critical role in allowing the increase in processing capacity. The 1981 amendment of the Meat Act removed the requirement to demonstrate economic need, which restricted the building of new processing capacity, and the 'open-door' policy which allowed farmers and marketing companies the right to have livestock processed through any processor. This was when processing companies started to compete more strongly for livestock to slaughter.

Another area of critical government influence was around labour law and relations. The union movement within the meat processing industry was traditionally very strong. A large number of strikes and lockouts occurred, much to the detriment of the industry. In 1991, the Employment Contracts Act (ECA) was introduced. The ECA provided labour law that was more focused on achieving company outcomes, and significantly reduced the power held by unions. Individual bargaining was introduced instead of the long standing National Awards. This provided companies with greater flexibility and allowed then to be more responsive to the needs of farmers and customers through the introduction of shift work. The introduction of shift work completely changed the economics of the meat processing industry by allowing the construction of smaller, more specialised plants that required less capital to build. Further, rather than shutting an entire chain in response to reduced supply of livestock for slaughter, companies could cut a shift and the plant would remain open. In addition, the ECA largely curtailed industrial action.

In 2000, the employment law was again changed with the enactment of the Employment Relations Act (ERA). The ERA has given unions more power and reduced the flexibility available to employers, with the reintroduction of collective bargaining. Many in the processing industry feel that Government is dictating regional labour issues and relations with only limited understanding of specific regional needs. There have been further more recent changes to employment law with the Holidays Act (2003). The additional week annual leave and the introduction of relevant daily pay for sickness or holiday pay have increased labour costs. Employers now have to pay hourly rate and bonuses rather than just the hourly rate to employees on paid absence. Legislation around occupational safety and health has also introduced significant costs to the processing industry.

In the late 1990s, some markets perceived the New Zealand Meat Board to have a state trading enterprise (STE) status. This was not the case as the New Zealand Meat Board received no funding from Government, only from levy payers, and the New Zealand Meat Board was not involved in the sale of any meat products. However, the New Zealand Government was concerned that the New Zealand Meat Board was perceived as a STE in trade negotiations. Therefore, the New Zealand Government was reluctant to challenge US tariffs on lamb. The New Zealand Meat Board had initiated a long-running debate with US lamb industry representatives and the Clinton administration to convince them the introduction of tariffs on New Zealand and Australian lamb was anti-competitive. Eventually, the New Zealand government became involved which saw the tariffs removed after nearly three years and a World Trade Organisation dispute hearing. These tariffs, while in place, resulted in the industry losing a significant amount of money (one informant estimated this at approximately $20-30 million).

The more recent lack of connection between the meat industry and the New Zealand Government and the disinterested approach taken by the New Zealand Government towards the industry has resulted in a lack of investment and the introduction of legislation that has increased costs for the industry. The lack of investment has meant that sheep industry research and development has declined. Some respondents felt that the disconnect had contributed to the lack of vision and leadership at the national level. Further, the lack of in-depth understanding of the issues faced by the industry was perceived as becoming apparent in some of the more recent trade negotiations. For example, presently there is too much focus on China with respect to trade negotiations, and too little on more approachable markets like Japan, Korea and USA, and emerging markets like Russia and Eastern Europe. There is a view that the New Zealand Government has done little to benefit or support the meat industry in the long term, but has only really acted to add costs in the short term.

Chapter 9
Industry Structure

The New Zealand meat processing and exporting sector in general has been a low profit industry. Large amounts of capital have been expended and lost through asset write-downs, plant closures and company collapses. Various sources have suggested this was about $900 million between 1989 and 1994. Similarly, large amounts of capital have been successfully invested in plant upgrades and the building of new single-chain processing plants since the early 1990s. There have been numerous company takeovers and several rounds of rationalisation within the industry. The meat industry appears to be intrinsically unstable, with intense competitive rivalry and even cutthroat competition at times, both in procurement and in the marketplace.

9.1 Production

9.1.1 Certainty of supply

New Zealand's sheep production systems are based entirely around pasture supply. This pasture supply is seasonal which in itself varies between years in response to variations in weather conditions. In addition, to variation in the timing of lamb supply, the specifications of those lambs in terms of carcass weight and fat cover can also vary significantly between years depending upon how well livestock has been fed, which depends to a large extent upon the weather. This is yet another source of uncertainty for processors seeking to commit to contracts with exacting customers.

Most processing companies do contract to supply product to customers. In addition, most of their costs other than livestock costs are fixed or semi-fixed as with labour, and therefore need to be covered. In response, processors seek to procure lambs by paying premiums to farmers over and above market prices, especially in the shoulders of the season, to ensure throughput to cover the fixed costs. This requirement by processors to meet customer contracts and cover fixed costs, combined with the lack of farmer loyalty, leads to the intense and often cutthroat rivalry between processing companies for lambs to slaughter and process.

9.1.2 Land use change

Land use change is a significant threat. The current low prices for lamb and wool compared with alternative enterprises, are encouraging those farmers with suitable land to convert to an alternative enterprise. This is tending to push the sheep production sector into the hills. This will in the longer term limit the supply of lambs for sale in that the supply will become more seasonal and more variable, reversing all the gains made in recent years. This would be incredibly costly for the industry for a number of reasons. Firstly, a greater percentage of excess capacity will be required to process the more peaky supply of lambs. Increased exposure to weather variation will increase uncertainty around lamb supply times. The total supply of lambs is likely to decline. Processors' ability to supply high-value, sometimes year-round, customers will be diminished. All of this will contribute to even more cutthroat competition and instability in the meat processing sector. This situation will of course create opportunity for some farmers to re-enter sheep production to earn super profits from procurement premiums to the detriment of the wider industry, until the next price downturn.

The expansion of life-style blocks is a further land use change that continues. This is often of greater consequence for dairying land because of its proximity to large urban centres. However, this creates more pressure from dairying for high-quality sheep farmland.

The impending involvement of agriculture in a greenhouse gas emission trading scheme will add more pressure to sheep farming. The need for other land users to offset emissions may see expansion of forestry. This forestry will largely be in hill country that is readily accessible with good infrastructure to allow easy and cheap harvesting of timber. Some forests, for example native forests, may be established in hard hill country with a view towards never harvesting them. Sheep will be squeezed between dairy cows and trees for carbon farming unless profitability within the entire industry markedly improves, or everything else declines to even lower points.

9.2 Processing

9.2.1 Barriers to entering meat processing

Between 1922 and 1972, only three meat processing facilities were built, largely because of the 'open door' policy which gave producers and co-operatives the flexibility to access killing space at whichever facilities they wanted. Killing space did become limited and many of the processing companies did not have the facilities required to produce the cuts that customers sought. These factors, together with anti-competitive behaviour against marketing companies, resulted in the Meat Act being amended in 1981 to remove the need to provide an economic justification for the construction of new processing facilities. This made entry to the processing industry significantly easier, and because meat processing facilities can be constructed for relatively little investment, the barriers to entry were relatively low. Between 1980 and 1989, 16 new, mainly small, meat processing facilities were constructed, 10 abattoirs were upgraded to export plants, while 12, mainly large, plants closed.

New entrants or companies building new plants were able to take advantage of labour law changes around more flexible work conditions and multiple shifts. This allowed these new plants to have lower labour costs than the incumbents did. These new plants could also install the latest automation and processing technologies allowing further reductions in labour costs, and better matching the changing demands and specifications of customers. The incumbents were often not in a position to adopt these new 'best practices' because of their low financial performance and subsequently weak balance sheets. There were also company-wide labour agreements which may not have allowed shift work or other labour innovations. The resultant cost differentials were often significant, particularly given the low profit margins typical of the industry. Clark and Ross (1988) reported a $1.36/kill unit (both sheep and cattle, median was $14.64) differential between the upper and lower quartiles in a survey of 12 processing plants in 1987, while Southpac (1994) suggested a differential of $3/head for lambs in 1994.

Today, there are some significant barriers to entry in large-scale exporting and marketing of lamb overseas. This is the result of the need to establish relationships with customers, secure supply of product and the allocation of EU quota. The role of the EU quota in affecting company behaviour is discussed in more detail below. In addition, processors now need to be able to attract a skilled and reliable workforce, in what is a very tight labour market, to an industry with high physical demands that does not provide a pleasant work environment.

9.2.2 Barriers to exiting meat processing

Converse to barriers to entry, the barriers to exiting the processing industry or to closing a particular processing site are also high. The costs associated with closing a site include redundancy payments to a large workforce. Further, the assets are quite specific in their use, although chiller and freezer space can store other produce, as was the case with the Whakatu and Tomoana facilities near Hastings. It cost AFFCO $71 million in 1998 to close four processing sites at Waitara, Taumaranui, Whangarei and Omanu.

For individual processing companies to make the decision to close a plant, they carry the full financial cost of the closure, but are unable to capture the full benefits of the closure. This is because other processors will secure some of the livestock previously supplied to the closed plant. In addition, the closure of a plant may provide an opportunity for another plant to be built, either by an incumbent or new player, and to capitalise on local farmer discontent with the closure. Therefore, closures that would be economically rational from an industry perspective often do not occur and excess capacity remains. This is the current situation for the sheep meat processing industry. However, some of the larger companies have previously co-operated to allow the closure of some plants. The closure of both Weddel Crown by Trial Run Holdings (nearly all North Island processors) and Hawke's Bay Farmers Meat Co-operative involving Waitaki, Weddel Crown and Richmond, were managed in this way.

9.2.3 Excess capacity in the processing sector

There was unanimous agreement amongst informants that the processing sector suffers from excess capacity. There is a requirement for some 'slack' or over-capacity in processing because of the seasonal pattern of lamb supply driven by the pasture-based production systems. However, the existence of excessive over capacity means that there is aggressive, and even cutthroat, competition for lambs to obtain volume throughput to cover the high fixed and semi-fixed (labour) costs. Various estimates suggest that all New Zealand's lambs could be slaughtered and processed within 20 weeks based on current capacity with over capacity sitting at about 30 per cent. The resultant marginal cost pricing through the payment of procurement premiums reduces processor profitability and distorts market price signals to farmers.

Reducing the capacity of the processing industry is challenging for individual companies and even for companies seeking to work collaboratively because of anti-competitive regulations. Such reductions would provide significant benefits to processors providing the potential to increase profitability. However, reductions in processing capacity are usually met with strong negative sentiments from farmers who fear that reduced competition for lambs at the farm gate may mean lower prices to them. This is unlikely to occur because the margin improvement for processors would occur through cost savings, rather than lower procurement prices. Farmers also fear the inability to access killing space in a hurry if they should need to because of adverse seasonal conditions, such as those that occurred in early 2008.

9.2.4 Producer control of the processing sector

Farmers exercise some control over the processing industry currently through the two large cooperative processing companies, PPCS and Alliance Group. Farmers have long held control over the processing industry through cooperatives (AFFCO was previously a cooperative) and through the NZMPB investment in most of the processing companies, via their investment vehicle, Freesia Investments. Because the level of farmer investment

through these various means is very low compared with that in their farming businesses, farmers place much greater emphasis on maximising the return from their farming interests. The lack of a fair value share in the meat processing cooperatives also means there is no incentive to seek an increase in the value of farmer investments in the meat industry.

The balance of power between farmers and processors changes relative to the supply of feed, the availability of processing space and the demand for lambs to utilise capacity or meet advance contracts. When farmers have a ready supply of pasture to feed lambs, they will often prefer to keep growing them to heavier weights, rather than necessarily supplying them at the times required by the processors. This encourages processors to raise the price paid to farmers to secure supply of lambs, facilitating rivalry between companies. This also occurs when processors have made commitments to customers to deliver lambs of a specific type at specific times. In this situation, processors will tend to contract supply to secure livestock at a known price. Conversely, when killing space is in high demand, as when feed supplied become short, the balance of power swings back towards the processors and they lower prices paid to farmers. The relationship between farmers and processors is most tense when farm-gate prices are low.

Further, the intense rivalry for supply of livestock means that processors have to pass on almost all changes in market prices and exchange rates to farmers without much buffering in order to survive themselves. This means that the price farmers receive for lambs can vary greatly between years. This encourages farmers to optimise their farming system to fit with their environment and strive for production efficiencies with reduced alignment to customers and the demands of consumers, because they are unable to pass on increases in cost. However, farmers have responded to various industry-wide market signals such as reducing fat cover, improving the presentation of lambs at the time of slaughter, increasing carcass weight and adjusting the seasonality of supply where the environment permits.

Governance of co-operatives can be problematic, especially if there are no independent directors. Cooperative directorships can often be a 'popularity contest' and it can be difficult to implement change if it is not 'popular' amongst farmer shareholders. This manifests itself most clearly in the difficulty associated with rewarding differentiation. However, informants generally believed that there is no perfect ownership structure and industry model. The key is how well the business model fits and how effective it is.

The lack of vertical integration within the meat industry was noted by several informants as being in strong contrast to similar industries in other countries, and even the dairy industry in New Zealand. Vertical integration was noted as being one way of over coming the intense competitive rivalry and instability present within the industry. Numerous informants felt that the natural owners of meat processing plants should be farmers, but they did not want to own them and therefore sold out of co-operatives. Farmers have shares in the remaining co-operatives, yet some farmers opportunistically play off companies against each other to increase their price.

9.2.5 Processor indebtedness

Historically, the majority of capital invested in the meat processing industry has been that of banks. Southpac (1994) estimated the aggregate debt:asset ratio for the New Zealand meat industry was between 70-75 per cent in 1994, up from 55 per cent in 1989. In 2006, some individual companies were carrying a similar level of total debt. Because of this significant exposure to the meat industry and the low salvage value of the assets, banks have tended to

continue to support 'weak' players, ensuring that excess capacity and low levels of profitability persist.

Several informants expressed the view that banks had made "good money" during the expansion era of the meat industry. However, the banks are now stuck with large amounts of capital in an industry that was struggling to pay their interest costs, let alone cover the full cost of capital.

9.3 Industry bodies

9.3.1 The New Zealand Meat Board and affiliated organisations

The New Zealand Meat Producers Board (NZMPB) was established in 1922 to address industry problems such as unsatisfactory representation in the UK and had the power to enact market interventions; exercise regulatory functions such as licensing companies entering the industry between 1922 and 1981; and control the export of meat and shipping arrangement. The NZMPB's role was one of overview of the industry. The companies published a price schedule in the beginning of the year and the farmers produced the type of stock for which they would be paid the most money. Hence, farmers tended to produce the same type of lamb. This was an ineffective procurement system that was supply-driven. Good profits were generally earned from exporting whole carcasses, so there was little reason to explore processing into cuts. Farmers were able to capture 80 per cent of wholesale price because the product being sold, whole frozen carcasses, was relatively unprocessed.

However, in 1982 with the rapid increase in lamb numbers slaughtered, up from 26 million in the mid 1970s, to 39 million in the early 1980s, market conditions became very difficult and exporters were unable to offer a meaningful price to farmers for their lamb and mutton. As a consequence, the Meat Exporters' Council (MEC) and the NZMPB agreed to the Board intervening in the sheep meat market. The NZMPB agreed to buy and market all production for the next two seasons at the Government's SMP level.

While the NZMPB was responsible for marketing and selling of meat, many industry participants believed the NZMPB was not successful. This was because they were too price driven with no focus on costs; did not encourage the production of the 'right cuts' at the 'right time'; and lacked consumer and customer awareness. The processing sector was also able to take advantage of the NZMPB's lack of commercial focus and and experience, and charged extra to supply desired cuts. However, others at senior levels in the industry believed that with such a high volume of lamb coming forward, partly as a result of the SMP scheme, the Board did an excellent job in a very difficult environment.

The Meat Planning Council (MPC), established in 1991 to improve market returns, was responsible for negotiating shipping rates on behalf of the industry, and tried to coordinate marketing activities and negotiations between exporting companies. The MPC was disestablished in the mid-1990s.

Meat processing companies only had to process meat and had no involvement in the marketing sales. However, by 1985, market returns improved and opportunities for value-adding processing emerged, the meat processing companies wanted more influence and do their own sales and marketing. As a result, the NZMPB handed back the majority of lamb and mutton to the processing and exporting industry.

Through the 1980s and 1990s, the Meat Board was a *producer* board that had shares in many processing companies and was therefore one of the industry players and not an impartial *industry* body. Many informants considered that this impartial involvement hindered necessary structural changes to the industry. Eventually in 1997, the NZMPB was changed into an industry board, the New Zealand Meat Board (NZMB), as opposed to a producer board. The purpose of the Board was to act as an industry facilitator. There were also views held that NZMB lacked transparency, provided no incentives to innovate or invest and some potentially innovative exporters were not allowed to enter the industry due to licensing requirements, and the compliance costs for farmers were high.

NZMB is now only responsible for quota administration and export licensing. It is no longer able to invest in cash-strapped processing companies, or to purchase meat for sale. The NZMB also manages industry reserves and carries out some industry-good activities using farmer levies such as generic market development, advertising and research and development. The bodies representing meat and wool producers were amalgamated into Meat and Wool New Zealand (M&WNZ) in 2004. This amalgamation is seen by some in the sheep industry as being problematic because meat and wool have little in common in terms of markets and marketing.

The NZMB allocates the EU quota to processing companies on a 3-year rolling average of lambs slaughtered. These lambs can be destined for any market, including the domestic New Zealand market. Quota can be traded amongst processors and exporters, with non-exporting processors able to realise significant revenue from the sale of quota allocation. These transactions are off-market between the companies concerned. This system provides stability for existing exporters – they can invest in market or product development with some degree of certainty. New entrants can acquire quota either through purchase or after three years of processing lambs. Two percent of the total quota allocation (initially three percent) is set aside for potential allocation to new entrants. There are several weaknesses with this system of allocation. Firstly, the quota is allocated on *lambs slaughtered*, not the amount of *product sold* into the quota markets, which incentivises companies to process as many lambs as possible. Secondly, those companies that do not invest in the development of EU markets and products to meet customer requirements are able to realise a return on the investment of other companies, essentially free riding. This disincentivises companies to develop the EU market. That New Zealand can manage its own quota into the EU is unusual, and most industry participants believe that the right to manage that quota must be protected for the good of the New Zealand sheep industry. At this stage, the EU has never had any concerns about how the quota has been managed. New Zealand Government requires an independent review every three years of the quota allocation mechanism to ensure that it is fair and equitable. There is some level of negativity within the industry towards the current quota management system, but a 'better' system has yet to be designed or proposed. A quota system must be simple; provide some security for processing companies as it may be too risky for them to invest in the industry otherwise; and ensure highest possible net returns to the industry.

9.3.2 Research and development

The New Zealand Sheep Council was established in 1990 in Southland. Its purpose was to increase the uptake of the numerous technologies available to farmers to increase productivity, and to create a forum for farmers interested in production rather than politics to get together. Analysis at the time suggested that improving the carcass weight of lambs from the then average of 13.7 kg to 15.1 kg carcass weight would return the average farmer in Southland $7,000 per year, equivalent to adding $30 million to the regional economy. Focus farms were established, and this approach evolved into the highly successful Monitor Farm

Programme currently managed by M&WNZ. Monitor farms have been a successful means of technology transfer because farmers tend to trust information from other farmers. Monitor farms were designed to address the production gap between the highest producing farmers and those in the middle. The New Zealand Sheep Council is now a national body supported by M&WNZ with levy funding.

The Meat Research Development Council (MRDC) was also established in 1990. Between 1990 and 1997, when the MRDC was disestablished, all on-farm research and much of the processing research were managed through the MRDC. By 1992, 24 monitor farms had been set up across New Zealand. Since 1997, various industry-level organisations have been responsible for funding and managing on-farm and processing research, development and extension, including the Research & Development Division of the NZMB. Meat New Zealand and Meat & Wool Innovation emerged in 2001, but were replaced with M&WNZ in 2004.

Sheep Improvement Limited (SIL) is a genetic improvement company established from a number of previous animal breeding services such as Animal Plan, Flocklink and Studfax. All sheep levy payers own this centralised organisation. Its purpose is to improve the rate of genetic gain amongst the New Zealand sheep flock. Stud breeders are the most regular users of the service.

Ovita is an organisation established to invest in and direct research into increased knowledge of the sheep genome. Ovita was formed following the McKinsey report on the future of the wool industry in New Zealand, and mobilised reserves from both the NZMB and the New Zealand Wool Board to provide seed capital for genetic research.

The Meat Industry Research Institute of New Zealand (MIRINZ) undertook research for processing companies. Initially it was aligned with the NZMPB and funded by New Zealand Government, meat producers and meat processors.

AgResearch Ltd is a Crown Research Institute, established in 1992, that undertakes research at farm level. In 1999, MIRINZ became part of AgResearch. The processors and the NZMB largely felt that the two organisations, while separate, were silo-driven and did not collaborate sufficiently. In addition, many processors and the Board felt that owning a research and development institute was not their core business. Some informants felt that MIRINZ essentially did themselves out of a job because they produced enough technology for the industry and the industry was not interested in more. For example, 15-week shelf life due to vacuum packaging did not require improvement to 20 weeks as 15 weeks was more then enough. All the work that *needed* to get done was done. Also, some processing companies increasingly wanted to do their own research without the risk of competing companies knowing about their work.

The single largest funder of research supporting the sheep meat sector is the New Zealand Government through its agency, the Foundation for Research, Science and Technology. Further Crown support is channelled into the sector via the Tertiary Education Commission and the Ministry of Agriculture and Forestry Sustainable Farming Fund.

Chapter 10
Conduct

The conduct of processing companies and farmers reflects the level of volatility in prices and the intense rivalry between processing companies. Relationships between farmers and processors are frequently strained, especially when prices are low. The expansion of the major processing companies across regions has meant that co-operation between processors has largely ceased, and rivalry has intensified further.

The low level of profitability within the processing sector has mean that investment in research and development has been limited, while co-operation between farmers through levy payments has allowed significant investment into on-farm research relative to the investment into processing research and development. The entrepreneurial nature of many of the people involved in the processing sector has been a significant factor in conduct within the sheep meat industry. Similarly, the egos of other industry captains have had a different influence on industry conduct.

10.1 Relationships between farmers and processors

Typically, there has been very limited interaction between farmers and processors. Farmers tend to contact the companies only when they want to slaughter lambs, and similarly, processors tend to only contact farmers when they are seeking lambs to process. The main flows of information include slaughter price and kill sheet performance. Some companies have sponsored Farmer of the Year competitions, run farmer field days and sponsored other extension events. Historically, there has been relatively little communication to farmers about market trends or market opportunities. However, the market signals that have been provided such as the desire for heavier lambs (16.5-19.2 kg carcass weight) have been received an acted upon by farmers. This lack of communication may be due to a lack of trust in farmers because they have tended to readily share information, sometimes to learn from each other and sometimes to demonstrate their level of performance. Sometimes this information may be commercially sensitive, and distrust is a rational response when that information is used by farmers in trying to bid up the procurement price through the 'Sunday night auction' held by some farmers between the various processing companies, when they ring around representatives at different processing companies seeking the highest price. The relationship between many producers and processors is a spot market relationship.

Many respondents thought that information flows between farmers and processors and the market had improved markedly, but that there was still significant room for improvement with more substantive price differentials for achieving or not achieving product specifications and timing of supply. Processors are also seeking better information from farmers, especially in order to understand the likely patterns of supply. Many informants spoke of the need to increase the use of supply contracts to improve the certainty of supply because there is a widespread recognition that supply uncertainty is a root cause of instability in the meat processing sector.

There has been a relatively low level of uptake by farmers of contracts to supply lambs and often, farmers break contracts when spot market prices are higher than the price contracted. This is for several reasons. Farmers do not always remember when contracted prices were higher than spot market prices, so take the short-term view, not recognising that this behaviour impacts on the processors ability to fulfil their customer contract and to therefore

offer contracts in the future. Farmers do not tend to place as much value on price certainty as do processors who consider price and supply certainty to be of paramount importance. Without contracts they are buying short and selling long. The low value that farmers place upon certainty around price may be due to several factors. Farmers already deal with considerable variation through weather, the impact of which they can only partially manage, and this may mean that price risk is something to which many farmers are not averse. Similarly, it seems that many farmers favour flexibility when it comes to price because there is a chance that the spot market price will be higher, which is probably why the livestock auction system persists so strongly even for finished livestock. Another reason is that the auction system is transparent and open, whereas supply contracts may be viewed with suspicion. Some processors also sometimes break contracts with producers. Many contracts are in reality little more than 'options'.

Sheep farmers, unlike dairy farmers have a broader range of aspects within their business they can influence. Sheep farmers can influence their revenue through timing of sales, the weight and product specifications and the choice of buyer; hence, the desire to retain flexibility in selling options. Dairy farmers typically concentrate on farm costs and the level of production.

10.1.1 Spot market relationships

The variation in prices between and within years due to procurement premiums and exchange rate volatility, ensures that 'trading' farmers have very low levels of commitment to individual processing companies. Instead, they focus on the best possible margins for themselves at the time of the transaction, which often includes breaking of supply contracts. This low level of commitment is also driven by farmers' low level of investment in the processing sector.

The lack of loyalty by some farmers to individual processors and the spot market relationships between many farmers and processors were viewed by most key informants as being a critical barrier to increasing the performance of the entire sheep meat industry. This is because without certainty of supply, processors cannot easily commit to contracts with customers and especially to contracts during the shoulders of the season when the level of competition is high. This situation places processors in a particularly vulnerable position when attempting to supply customers with relatively exacting requirements, or it means they cannot take up opportunities with such customers. One strategy to overcome the instability inherent in a market with an empty core, such as exists in the sheep meat industry, is vertical integration, that is genuine farmer ownership involving significant levels of equity. This ensures loyalty and should avoid opportunistic behaviour around supply and procurement.

Some farmers do commit to processors in the long-term, while others will commit to a processor for a season. Large farming businesses also have greater bargaining power with processors, because procurement is largely driven by the need to achieve throughput. This is discussed further below.

10.2 Relationships between processors

10.2.1 Competitive rivalry around procuring livestock

There is intense competitive rivalry between the meat processing companies. This rivalry has existed for a long time. They compete for the supply of lambs to process and market, to cover their fixed costs and meet contracted customer programmes; and for access to the most

valuable customers to obtain the highest possible margins. There is also competition to process lambs to retain share of EU lamb quota. Further, they compete for the recruitment of high quality employees to work in their processing facilities because the quality and consistency of their products is critical to the retention of customers. This competition is made worse because of the persistent over-capacity amongst the lamb processing companies. These companies are competing for scarce resources and markets in order to utilise more of their own non-scarce processing facilities.

The price processing companies can *afford* to pay is determined by their product mix. However, the behaviour of competing meat processors and farmers drive the price that processors *have* to pay in order to procure lambs ahead of competitors. A processor has to balance these factors and consider their ability to meet contracts with customers, and keeping their labour force employed, when setting their price to farmers. These drivers have encouraged companies to not publish schedule prices and arrange confidential contracts with some farmers.

Procurement premiums have ensured that meat processing companies compete away any returns they earn from processing efficiencies and good marketing, and continue to earn low profits. Processing companies earn negative margins over much of the year. This level of rivalry has been exacerbated by the expansion of the major processing companies across regions.

One strategy for these companies to employ to avoid cutthroat competition and paying procurement premiums is horizontal co-operation, although this approach did get some processors into trouble with the New Zealand Commerce Commission for procurement price fixing in the late 1990s.

10.2.2 Marketing, market access and quota management

When processing companies 'stayed' in their regions, they were content to cooperate in marketing activities. The North American Lamb Company, a joint venture originally between AFFCO, Alliance, ANZCO and Richmond (now includes Alliance, ANZCO and PPCS) is such an example. These New Zealand exporters also own a stake in the Australian lamb marketing company in the US. However, all of the major processing companies have become national processors, so are now competing for the same lambs. As a result, some of the joint marketing arrangements have collapsed. There is now very limited horizontal co-operation between processors. Historically, farmers would have seen such horizontal co-operation as anti-competitive, but there is now a growing desire to see greater co-operation, especially in marketing.

One area where the companies cooperate is in negotiating market access, trade policies and quota management, in particular through the NZMB and with assistance from Meat Industry Association (MIA). There has also been some generic market development and promotional activities for lamb, but this has largely been implemented by the M&WNZ, and funded by levies and processors.

The EU lamb quota that New Zealand owns provides a comparative advantage relative to other suppliers like Australia. There was very wide support for New Zealand and the NZMB to continue managing the EU quota. However, some key informants who felt that the manner in which the quota is allocated was contributing to the on-going instability of the lamb industry, and in particular saw it as a driver of the intense competition around procurement. The volume of lambs processed for export but not necessarily exported, affects the amount of

EU quota available to individual companies. EU quota allocation is determined based upon a rolling three-year average of the market share of lambs slaughtered. This was seen as one of the key drivers of companies competing for the supply of lambs, to retain access to high-value EU markets. In addition, processors could gain access to the quota by throughput without contributing to the development of the EU market, and therefore gain high returns without actually having invested. Some companies on-sell their quota rights to other competing companies.

Some other informants held a contrary view and felt that the current approach ensured stability for the incumbents while allowing new entrants to access quota over time. They also felt that the quota allocation did not drive competition between processors for lambs to slaughter.

10.2.3 Industry rationalisation and research

Another area of co-operation has been in industry rationalisation. A number of the larger processing companies contributed significant amounts of capital to purchase and/or close bankrupt companies in an effort to reduce excess processing capacity. Trial Run Holdings was a joint venture company set up to manage the mothballing of Weddel Crown's six plants.

Historically, there has been collaborative investment by the processing sector into research and development, however, this investment has now evaporated and is aligned directly with individual companies. This lack of co-operation has contributed to the substantial reduction in the funding of, and hence the activities of MIRINZ which is now part of AgResearch. Research for the processing sector is covered in more detail below.

10.3 Relationships between processors and markets

10.3.1 Approaches to marketing/selling lamb

Key informants identified two distinct market or customer types, the commodity and 'value-added'. Each requires a different approach to marketing or selling lamb, with the different approaches being better suited to different processing company structures. Commodity markets are throughput driven, requiring a competitive market approach, which better suits larger businesses. The value-added type is market driven, requiring a collaborative marketing approach. This was considered to favour smaller businesses, requiring strong market relationships with niche customers and farmers. However, supermarkets require exporters to be able to supply a sufficiently large volume to fill their stores and with a continuous supply. Many informants suggested that it is very difficult for processors to be market-led in their approach because of the intense competition for livestock to process.

Many customers prefer and expect exporters to have representatives in the marketplace, rather than relying on telephone and email communication with the occasional visit to the marketplace. This is especially the case where a customer is a premium customer for high-specification products and has a philosophy of partnerships with suppliers and producers. Some of these in-market relationships have been, and continue to be, managed collaboratively such as the New Zealand Lamb Company in North America. In the main they have been managed by the companies themselves.

10.3.2 Customer power

Although New Zealand dominates the international trade in lamb and mutton (55 per cent of the global trade in sheep meat), New Zealand lamb exporters do not hold the balance of control within most supply chains for lamb meat. Primarily large retailers in the export markets hold this position. This is especially the case for the UK, which buys approximately 24 per cent of lamb by volume and 26 per cent by value. However, New Zealand exporters do offer a high quality product that is in demand by consumers, and the product is produced to meet the numerous requirements. In addition, some of the processor-exporters have established long-term relationships with many of their customers in order to ensure that their customers are committed to them. The formation of producer clubs and having a compelling story around the product further assists to cement these relationships. This is because consumers buy into the story meaning that the products such clubs deliver are differentiated, thereby weakening the retailer's power.

10.3.3 Availability of low-price substitutes

Lowly priced substitute protein products such as chicken, pork, turkey and some types of fish are widely available in all the markets to which New Zealand sells lamb. In general, New Zealand lamb is not directly competing with these products because lamb meat is positioned as a high value meat product. However, these low priced substitutes may well set the tone of the price for the other higher priced products in the market. In addition, retailers can often source local or alternative supplies of lamb, and in some markets, there is growing pressure for retailers from their customers, the consumers, to do so.

10.3.4 Further processing

Companies in the meat processing and exporting sector have pursued different strategies around further processing. During the 1990s, Alliance established a large product development group aiming to develop finished meat and meal products. Similarly, Richmond embarked on a food strategy in the late 1990s and early 2000s investing heavily in the redevelopment of their Takapau processing plant. PPCS purchased a half-share in Barry Brooks, a cutting and packing plant in the UK to enable it to get closer to the customer and add more value to their lamb meat. This investment has recently been sold. In the key UK market, supermarkets have cutting plants aligned to them for processing both domestic and imported meat products. This makes it difficult for NZ companies to sell further processed lamb products in this market. Most of the other companies have largely focussed on slaughtering lambs and processing meat into primal and sub-primal cuts for export. However, Bernard Matthews and Advanced Foods Limited further process lamb cuts to a retail ready form. In addition, the New Zealand Lamb Company in Los Angeles and Toronto operate further processing plants, processing both fresh and some frozen product for retail. Approximately 96 per cent of lamb sold through this channel in Canada is further processed.

10.4 Employment relationships in the processing sector

The meat processing sector has often experienced very poor labour relations. In the past industrial disputes were commonplace, especially during the 1980s. To overcome or avoid this challenge, the sector invested heavily in automation technologies, so they could reduce staffing numbers. The introduction of the Employment Contracts Act in 1991 shifted the balance of power towards the companies, and the number of strikes and lockouts declined

markedly. Lack of training, especially around health and safety, and job security were often key issues for employees. The health and safety record of companies has substantially improved. Companies can now provide a degree of job security which has increased the level of loyalty from employees.

Labour has always been a significant cost to the meat processing sector. Today, the relative importance of labour cost is less than in the 1980s, but it is increasing again because of the difficulties associated with attracting reliable labour. In 1982, Alliance paid $52m in salaries and wages, 31 per cent of operating expenditure. In 2002, Richmond paid $138m in salaries and wages, less than 11 per cent of operating expenditure; while in PPCS's 2008 half-year report it was stated that $156m was spent on wages and salaries, approximately 17 per cent of operating expenditure. The continued exposure to low temperatures and a 'dirty' work environment are critical factors in attracting younger staff, as are the rates of pay and current low levels of unemployment. The processing sector's workforce is getting older and some employees are having difficulties coping with the physical challenges of the job. Today, there is wide use of immigrant labour to overcome labour shortages. Few Pacific Islanders are involved because they tend to be based in the cities rather than in the regions where the processing companies are located.

10.5 Investment in on-farm research and adoption of technologies

Historically, there has been considerable investment into on-farm research. This research has been funded by farmers through the various levy-payer bodies and by Government. A number of research-oriented organisations have been established, some to fund and direct research, others to carry it out and others to extend the findings. The level of on-farm research investment has declined progressively in recent years.

Some of the key technologies that have been developed, extended and implemented on sheep farms include:

- Fertility scanning which assisted in establishing nutritional requirements of pregnant ewes
- Mechanisation on farm through the use of motor bikes which provided labour and time savings
- Sheep handling technologies which enabled one person to handle more sheep
- DNA testing technology which enabled breeding of high performance sheep for farming on low quality land
- Disease resistance traits in sheep for facial eczema and internal parasites
- Fertiliser ground spreading technology, which enabled the fertilisation of previously unproductive land
- Weighing scales which improved the ability of farmers to draft lambs to weight specifications and to establish the nutritional requirements of groups of stock
- Animal health products for the management of internal and external parasites, and vaccines
- Nitrogen fertiliser to boost pasture production in early spring when the nutritional demands of the ewe are highest

10.6 Investment in processing research and development

There have been innovations introduced and adopted by the meat industry, but these were largely developed through collective action through institutions such as MIRINZ. Most individual companies would not have been able to fund these developments on their own. These innovations were designed to improve the quality of the product, to provide the opportunity to supply fresh chilled lamb cuts to customers locally and on the other side of the world, and to increase productivity and improve safety in processing. Those innovations to improve quality and provide market opportunities include the introduction of accelerated conditioning and aging (AC&A), chilling systems, controlled atmosphere packing and livestock cleaning technology. Those developed to increase productivity and improve safety include knife-sharpening technologies, automated boning machines, robotics, and large freezers. It is important to note that much of this development was funded through cooperative bodies with most processors benefiting from the improvements. As a result, most companies have available to them similar technologies and plant designs, leading to, some extent, similar cost structures and the ability to produce similar products. These similarities in costs and prices mean that the companies potentially offer farmers very similar schedule prices for lambs. This further contributes to the high variation between years in farm-gate lamb prices, and the resultant farmer behaviour of focusing on those aspects of their systems that they can control – production costs, production levels and timing.

The recent upgrades of processing plants have helped to level the playing field further. Thus, in many ways the processing companies are undifferentiated in the eyes of their farmer suppliers, unless the companies differ in the non-price aspect of their service, accessing killing space when required, market information, and marketing strategy. This enables all companies to continue trading for a relatively long time, because the companies continue to attract suppliers, even if they are less profitable than their competitors.

Processing productivity increased but many big plants were closed due to reduced throughput. Increased output per labour unit also occurred. There has been significant up grading of processing plants – New Zealand processing plants now have very high standards and are world leaders in terms of efficiency. These improvements were in response to the changing hygiene requirements in several key markets.

Currently, there is little investment in research development in the processing sector. The limited research being undertaken is being carried out on behalf of individual companies. Some informants felt that the processing sector was most interested in investing in automation and other labour-saving technologies when labour costs were high. There was a view that such investment largely halted with the introduction of the Employment Contracts Act in 1991.

Single chain processing plants show an efficient use of capital through operating at full capacity for a larger percentage of the season by adding or removing shifts to cope with variations in throughput. Single chain operations also had a distinct cost advantage over multiple chain plants with respect to integrating labour saving technologies into their operations, when the kill is relatively flat, but when the kill is highly seasonal, the larger multi-chain plants are more efficient.

In addition to the changes in the processing sector, changes at the farm gate were also seeing increasing efficiencies in processing. Changing sheep breeds on the farm were beginning to produce heavier, leaner stock. More fertilizer, subdivision, improved pasture management and sheep nutrition were also key contributions to these gains. The result for the processing and export industry was that higher output could be generated from less stock. Larger

carcases were also easier to handle and processes resulted in reduced labour cost per unit on the slaughter board floor.

The butchery approach was common to processing in the early days of the industry where each worker was responsible for processing the entire animal. The industry soon moved to a chain process where each worker was responsible for one part of the process. Some processors have started to use the butchery process again to make their employees feel accountable for what they do and generate pride in their work. The efficiency of this method was questioned by some informants, but 'lean' thinking (e.g., Liker, 2004) would suggest that with good training this approach will be more efficient and less costly.

10.7 Leadership and entrepreneurship within the processing sector

A relatively small number of industry leaders have led innovation and change in the processing and exporting sector. These entrepreneurial individuals are widely recognised by their peers as having made substantial changes to the sheep meat industry. These individuals typically had a vision for doing things differently. The innovations introduced by these leaders include shift work in single-chain processing facilities, specialisation in the function of slaughtering and processing lambs, diversification of markets and getting close to customers. These leaders are all entrepreneurs who have challenged the rules imposed by the other participants in the industry to enhance efficiency and productivity, and to raise product prices.

Similarly, there is a view that egos and politics within the industry have held the industry back. This is because some industry leaders focused on maintaining the *status quo* and protecting the incentive structures in line with the interests of their incumbent companies. An associated problem was the governance of many of the companies. Directorships of the NZMB, and associated organisations, and of co-operative meat companies have tended to be popularity contests, resulting in boards sometimes unable to challenge management and engage in robust and informed discussion, especially when there are no independent directors involved. Some companies and the NZMB now do have independent directors.

There was also the view amongst many informants that in general, farmers are poorly informed about the realities of the meat processing business, especially the economics of the processing and marketing of lamb meat overseas. Similarly, some felt that processors had only a very limited understanding of farm production systems and the constraints that farmers face in trying to meet increasingly exact specifications. Several informants held the view that managers lacked accurate knowledge of costs along the entire supply chain, especially in the New Zealand-controlled stages of production and processing, and that this contributed to poor decision making.

Many of the informants suggested that there is an urgent need for a new industry leader to emerge to drive change within the industry. They will need to have the right vision and personality, because they will certainly need to challenge the *status quo*, which will 'upset' some incumbents along the way. Their role will be to ensure that farmers, processors and marketers build trust and "all work together to receive a fair share of the cake". A long-term view is required rather than the current short-term view that results from the intense rivalry between processing companies. There was a strong view that it is very difficult for an industry to build robust and sensible strategy in a crisis, but there was little disagreement that a strategy and vision to capitalise on the strengths and key assets is vital to the future profitability of the sheep meat industry. Strong leadership and co-operation across the industry is required to stabilise the industry and improve performance. Clear and honest

communication of the challenges and realities is required across the industry so that all participants can be well informed and contribute to industry transformation. This involves linking farmers with customers, as is being done successfully by some processors.

10.8 Power within the sheep meat industry

The predominant view was that the 'short-term' power within New Zealand sheep meat industry moves up and down the supply chain depending on various external factors that affect supply and demand. It was felt that processors held the power during the main part of the season when processing capacity typically limits slaughter rates, while producers dictate terms more in the off-peak period of winter and early spring. Farm-gate prices clearly reflect this with their seasonal shape. The market power was seen to lie with the UK supermarkets because of the size of the margins they add to the lamb they sell, but they do not control the entire industry.

Historically, the meat workers unions have held very strong positions, especially before 1990. The banks have also previously had considerable levels of influence over the industry because they have tended to have the most capital invested in the processing sector.

The real 'long-term' power lies with farmers because they control the supply of livestock. It is their use of that power that determines whether meat processing companies individually and collectively make a profit. Given the current structure of the meat processing sector, processors must compete for or contract throughput to cover their high fixed and semi-fixed costs, meet customer contract obligations and retain their valuable EU quota share.

10.9 Education, skills and knowledge

Having the skills to be a successful farmer are not necessarily the skills required to successfully direct a meat processing company. This is often a challenge for cooperative companies. Processing companies need to secure directors with the required competencies and skills to provide good governance and company oversight. Ensuring that there is a steady stream of new farming talent is also of concern. The average age of sheep farmers is estimated to currently be about 52. Training in the processing sector used to be excellent with a focus on multi-skilling with the knowledge developed helping to move the industry forward. More recently, processing workers have become more specialised in less tasks, which limits the flexibility of employees to work in other parts of the processing chain or business. There has been an increase in the emphasis placed upon training processing company employees to improve productivity and ensure safe work practices. There is the view that the education of processing technology staff is fairly poor, compared with the dairy industry. MIRINZ used to have the knowledge and expertise, and were frequently called upon when this knowledge and expertise were needed – processing companies did not need to invest in highly educated people. These people have now either left the industry or are due to retire in the next five years with no successors. Several informants noted that the most critical asset in the sheep meat industry, as in any other industry, is good people.

Chapter 11
Performance

11.1 Production & productivity

There have been significant productivity gains on sheep and beef farms during the study period. Sheep numbers have reduced, yet the volume of lamb meat exported has remained much the same as when sheep numbers were at their peak of 70 million in the mid-1980s. There has been considerable farm development during the study period with increased subdivision and fertiliser use. Similarly, there have been significant productivity gains in the processing sector through the adoption of single chain plant design, implementation of various automation and labour saving technologies, and shift work. These gains were described in detail in Part I, so are not repeated here, even though all respondents discussed the considerable gains made by both farmers and processing companies.

11.2 Compliance and product quality

Both processing companies and producers in response to customer requirements have introduced a number of investments and practices. Companies now require farmers to participate in various on-farm quality assurance programmes before they will accept their stock. The companies all employ sophisticated livestock cleaning technologies to clean animals upon arrival at the processing plant. Processors have also invested heavily in meeting stringent hygiene requirements. The changes have made New Zealand best in the world at processing meat. To improve the quality of product supplied to customers, companies have invested in accelerated conditioning & aging to deliver products with consistent tenderness, that are healthy with a high level of overall quality.

11.3 Management of human resources

In the 1980s, industrial action and disputes were relatively common in the meat processing sector. Such actions have not occurred in the sector for some time. This is partly due to the de-powering of unions in the sector, but largely because the employment conditions offered by companies have significantly improved. There is a relatively high degree of job security, especially for highly skilled employees, and a much improved health and safety record. Some informants spoke of the critical role that the labour force plays in the meat processing sector, and the high value processors place upon staff retention.

11.4 Community perception of industry

Informants felt that generally the New Zealand public have a good perception of sheep farming, particularly relative to dairy farming, from an environmental perspective. Maintaining this good perception is essential to retaining the freedom to operate, to farm the way New Zealand's sheep farmers need to produce a high quality product and make a satisfactory return on the investment and effort. There are numerous threats ahead as New Zealand attempts to reduce greenhouse gas emissions, improve water quality and protect its clean, green image for attracting tourists.

Agriculture has often been considered a sunset industry. The advances of the primary sector have not been highlighted and therefore the perceptions of the industry with respect to productivity and performance are often poorly aligned with reality. The industry could do more to improve its profile. This is important when it comes to attracting people into the industry, whether it is farming or processing, which is discussed below. The relatively unpleasant work conditions in the processing sector also contribute to the unattractiveness of the industry as a place of employment. Another misalignment of perception is the belief that the meat processing sector is still frequently beset by industrial disputes.

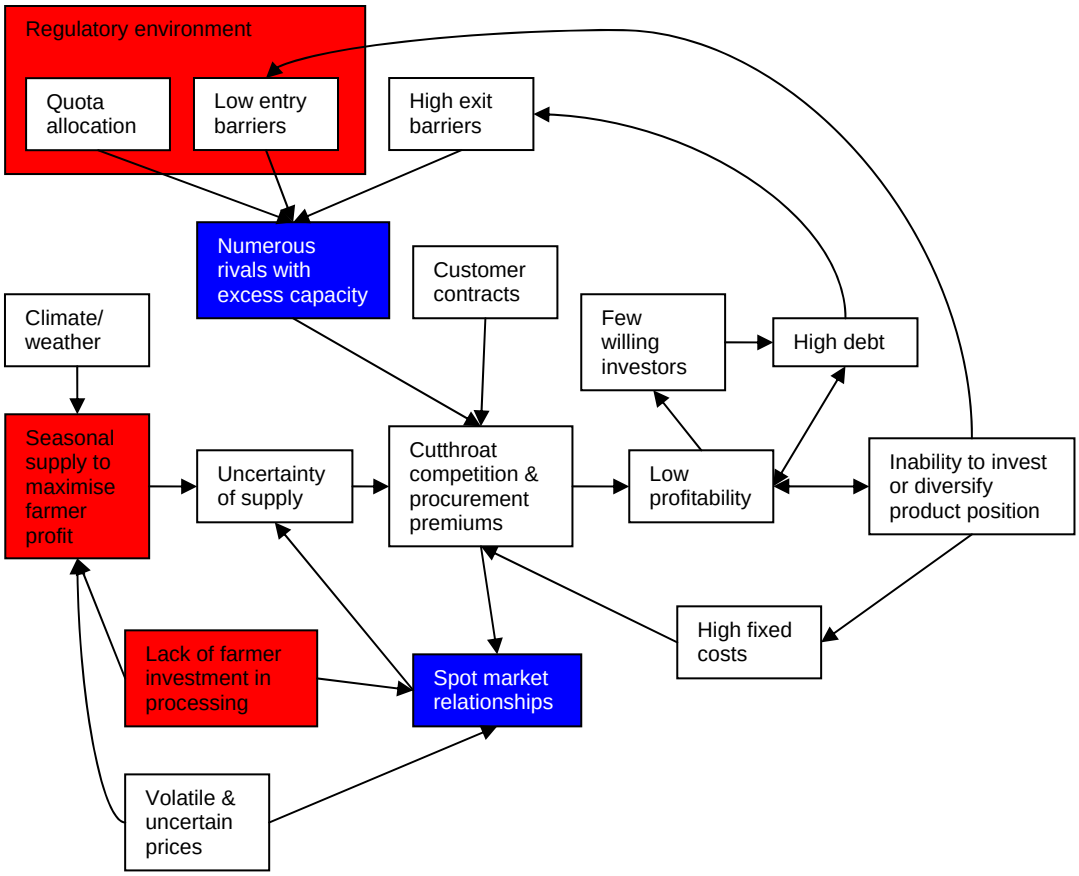
New Zealand's urban population, like many others around the world, does not focus on where its food comes from, although this may now be changing amongst some consumers. There is now a strong disconnect between rural and urban areas, in terms of understanding what farming is about and how it contributes to New Zealand's economy. This lack of appreciation of the realities of food production and processing is another threat to the sheep industry's freedom-to-operate, because this urban population could start to demand social and environmental services from farmers, without any economic consideration, let alone paying for them.

Chapter 12
Critical Success/Failure Factors

This study has identified a number of factors that have been important in transforming the sheep meat industry from a heavily subsidised, production-driven sector to one that is more market-oriented operating in a market economy. It has also identified factors that underpin the continued low profitability for process-exporting companies and variable returns for farmers.

The critical factors that drive instability within the industry and the consequences such as paying procurement premiums, low levels of profitability within the processing sector, and low levels of investment in diversification of product positioning are shown in Figure 12.1 below. The most crucial factors are the lack of farmer investment in the processing and exporting sector, seasonal supply pattern and the regulatory environment (shown in red). Key points at which the processors and farmers can exert influence are behavioural, specifically, the lack of co-operation between processors and their excess capacity, and the existence of spot market relationships between producers and processors (shown in blue).

Figure 12.1: Drivers of instability within the New Zealand sheep meat industry.



12.1 Operating environment

12.1.1 Market access

New Zealand has very favourable market access to the high-value EU market through the tariff-free quota. Further, New Zealand is allowed to manage this quota and its allocation amongst processors. This provides New Zealand companies a comparative advantage relative to our competitors in supplying the EU. However, this advantage has probably meant that exporting companies have focused less on the diversification of their customer base. The sheep meat industry is thus somewhat exposed to economic pressures in these closely aligned markets. Not only do the historical ties with the UK provide favourable market access, but also the distance from the rest of the world provides advantages. Shipping meat over these long distances provides time for the meat to age and improve its quality. This distance from other countries has allowed New Zealand to remain disease-free, which is incredibly important in maintaining market access. Further, the disease-free status of New Zealand is also an enormous advantage, and must be protected as best as possible to ensure continued favourable market access and reputation as a producer of quality lamb.

12.1.2 Government interventions

The removal of the numerous subsidies in the mid-1980s brought the New Zealand sheep meat industry into a market economy, exposing the industry to the full risks of the market, encouraging a focus on quality rather than volume. This has been good for the industry because it has encouraged a more customer-oriented approach to marketing, the development of new markets and considerable focus on productivity gains. In 1981 the processing sector was delicensed. This enabled new players to emerge and bring with them a range of innovations and new best practices that radically changed the economics of processing and the types of products being produced. The removal of most interventions in the sheep meat industry has been critical to the industry's development and productivity improvements.

The current regulatory environment contributes directly to excess capacity. The current low barriers to entry mean new processors can start up quite readily. The means of allocating EU quota provides processing companies with an incentive to offer procurement premiums. This distortion is probably a compounding factor rather than a key driver of processors' competitive rivalry. The introduction of the Employment Contracts Act (1991) provided much needed flexibility to the processing sector. It allowed the introduction of shift work and vastly reduced the influence unions held over the industry, having frequently held it to ransom through the 1980s and earlier. Today, the regulatory environment is relatively benign, except that it does contribute to the excess capacity and competition for livestock through low barriers to entry and high barriers to exit.

12.2 Industry structure

12.2.1 Seasonal pasture-based production systems

Pasture-based production systems are a double-edged sword for the sheep meat industry. On one hand, they provide a comparative advantage of relatively low cost production systems that yields a natural product. On the other hand, the highly seasonal nature of these supply systems requires some excess processing capacity, and variation in weather adds to the

uncertainty of supply. This seasonality and uncertainty of lamb supply drives processors to offer procurement premiums and engage in intense competition.

The production sector is, on paper, financially secure due to the dominance of family farms and older farmers who have accumulated wealth, either through being successful farmers because the 1980s removed the low equity and poor performers, or the recent large increase in land values, in some areas entirely due to the dairy influence. This financial security means these farmers can, if they have the necessary skills and motivation, modify their production systems to become more aligned to specific customer requirement. However, much of this recent wealth could be lost should land prices fall back to a level more accurately reflecting productive worth.

12.2.2 High processor debt levels

The high indebtedness of some processing companies means that they are exposed to a high level of financial risk in an industry characterised by low profit margins. This situation makes attracting additional equity difficult. Further, high debt levels mean that incumbent companies are not readily able to close plants because their balance sheets cannot bear the large redundancy and write-down costs. This contributes to the continued excess capacity in the processing sector, and in turn the intense competitive rivalry for livestock. Many processing plants are located in or near to urban centres and often have significant land associated with them that could be used for further urban/industrial development or dairying. This may provide an opportunity for some processing companies to reduce debt levels through the sale of surplus land if it is not required for effluent disposal.

12.3 Conduct

12.3.1 Leadership

Contrasting leadership views and approaches within the processing sector has contributed to innovation in the processing sector or stifled the changes that have been and are required to stabilise the industry. This leadership has seen the introduction of shift work, automation technologies and de-licensing of the sector. These leaders have brought an entrepreneurial, 'can-do' attitude to parts of the processing sector. In contrast, egos and industry politics have held the sector back because they had established businesses around the incentive structures of the day, and the associated investments had considerable exit costs. Leadership within the farming sector to encourage or facilitate industry co-ordination has largely been lacking because there continues to be a significant number of farmers who maintain spot market relationships with processors, which drives cutthroat competition to secure supply.

12.3.2 Farmer behaviour

The resultant shape of the sheep meat industry in New Zealand is due to behaviour of farmers, and some of the fundamentals of pastoral farming. The key behaviours of farmer that drive the shape of the industry are the prevalence of spot market relationships between many producers and processors and the lack of investment in the processing industry. The spot market relationships mean that processors have no certainty of supply, which in turn leads them to offer procurement premiums and engage in cutthroat competition, reinforcing farmers' opportunistic behaviour. The lack of substantive investment by farmers in the processing and exporting sector means that farmers are not concerned about the profitability

of that sector, but only with their own business. Farmers' desires for flexibility and opportunism, and lack of investment have substantively contributed to the weakness of the sheep meat industry. However, some farmers have adopted contracts with processors to supply lambs at specific times and to specific customer requirements. Contracts are sometimes broken, but not only by producers.

12.3.3 Processor behaviour

The processing companies were once regional companies so were not directly competing against each other for lambs to process and market. The removal of various regulations meant that they expanded the areas in which they operated, bringing rise to competition for lambs, and this has contributed to the breakdown of co-operation between companies in investing in marketing and market development, and in research and development. It also means that their response to the behaviour of farmers has been to engage in intense price competition and encourage spot market relationships to the detriment of their individual and collective profitability. This lack of profitability has driven the general reduction in market development and product innovation, particularly apparent in recent years, and/or to reduce their level of fixed costs. It has also ensured that many processing companies have been unable to address their high levels of indebtedness.

Although the industry level statistics do not show much change in market diversification, with the exception of the growth in USA sales, individual companies have developed markets for their products. The increase in contracted supply of lamb products to customers adds further to the competitive pressures facing processing companies – they need to secure the supply of lambs to fulfil their contracted obligations. However, the intense competition for lambs and the uncertainty of supply means that lower volumes of product are contracted than might otherwise be possible, and the low profitability means that these opportunities are not being developed as rapidly as they might perhaps be.

12.3.4 Innovation

Numerous innovations have provided quantum gains to production efficiency within the New Zealand sheep meat industry. Many of these innovations were developed by MIRINZ, and were designed to improve the quality of the product, provide the opportunity to supply chilled lamb cuts to customers on the other side of the world, and to increase productivity and improve safety in processing. Those innovations to improve quality and provide market opportunities include the introduction of accelerated conditioning and aging, chilling systems, controlled atmosphere packing and livestock cleaning technology. Those developed to increase productivity and improve safety include knife-sharpening technologies, automated boning machines, robotics, and large freezers. It is important to note that much of this development was funded through cooperative bodies with most processors benefiting from the improvements. The nature of the product now being sold has been transformed from a frozen carcass in the early 1980s to a range of both chilled and frozen, and bone-in and boneless cuts of lamb. Although individual companies do have brands, only one of these brands, Bernard Matthews, makes it to the retail shelf. Therefore, brands are of limited value to the industry. On the other hand, 'New Zealand Lamb' is of value, is widely recognised and essentially an appellation. The industry-wide use of Halal slaughtering has ensured the industry has retained some flexibility in the markets where the lamb meat can be sold.

Because of the relatively benign climate and the skills that they possess, New Zealand farmers have an excellent capability to produce lambs to market specifications. Many farmers have

responded to the market signals and increased carcass weights and have modified their production systems to reduce the seasonality of supply. They have adopted a wide range of technologies that have increased farm productivity. Investment in on-farm research, development and extension has been central to this success. Many farmers have the capability to modify further their farm systems to even more closely match customer requirements and timing of supply. Closer relationships with processors will be the catalyst to achieving these changes. But, more industry information needs to be made available to those involved to achieve the above ends.

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